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ABSTRACT

This book examines the advantages and disadvantages of various methods of financing education and discusses the basic issues related to increasing efficiency in education. Section 1 offers a short history of educational finance and discusses many of the traditional approaches to financing education. Section 2 presents methods for distributing funds to different levels of formal education and to various types of nonformal education. Section 3 describes different arrangements for raising educational funds and controlling their use. Section 4 examines different methods for forecasting educational resources and describes the Index of Educational Funding, a model for measuring national effort in educational spending. Section 5 discusses concepts of efficiency in education and develops a general approach for improving efficiency through intervention in the educational system. Section 6 deals with ways of increasing overall efficiency and decision-making in national educational systems. Section 7 presents ways of increasing educational efficiency, with emphasis on educational contracting. It also describes the Index of Educational Expenditures, a model for comparing different nations' educational spending. (Author/JG)

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Financing and Efficiency in Education

Reference for Administration and Policymaking

EA 008 037

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To Nancy

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Introduction

Everyone has the right to education. Education shall be free, at least in the elementary and fundamental stages. Elementary education shall be compulsory. Technical and professional education should be made generally available, and higher education shall be equally accessible to all on the basis of merit.

Universal Declaration of Human Rights, 1948

MOST developing countries are trying to reorganize and expand their public educational systems to make these goals of the *Universal Declaration of Human Rights* a reality. This is an enormous and very expensive job. There have been financial constraints at every step. Governments now think that spending on education has reached a ceiling and that they can no longer meet the educational sector's requests for additional resources. Governments are insisting that education must first operate more efficiently before they will grant more funds.

Educationists must, therefore, better understand the ways and the problems of raising additional resources. They must also learn to reduce current inefficiencies. These are essential steps toward solving the crisis of education in developing countries.

How did this crisis come about?

The demand for education has increased rapidly with population growth. In the last decade, world population has increased at an average annual growth rate of two per cent. In developing countries, population expanded at approximately 2.6 per cent per year. School age population grew even faster. The demand for education was also encouraged by the belief held by educators, economists, and politicians that educating a society's members is most necessary to further economic progress.

The increased demand for education due to demographic, economic, and political factors was reflected in increased enrollments. Growth rates of school enrollment in developing countries averaged 4.5 per cent in the last decade. Primary, secondary, and vocational schools, universities, literacy programs, educational television, as well as various types of informal education, expanded at an unprecedented rate.

Increased enrollment and educational activity caused increased capital and recurrent expenditures. In most countries, educational expenditures expanded twice as fast as the GNP. Higher portions of national budgets were increasingly allocated for education. Between 1960 and 1965, education's share of national budgets increased from 14.5 per cent to 16.4 per cent in Africa, from 12.6 per cent to 15.4 per cent in Latin America, and from 11.8 per cent to 13.2 per cent in Asia. These figures are in themselves significant, but they underestimate expenditures on education. They do not include other significant sources of funds: ministries, other than the Ministry of Education, that sponsor educational activities; and the entire private sector. In some countries, such as Thailand, educational expenditures by the Ministry of the Interior exceed those of the Ministry of Education. In Ethiopia, 7.8 per cent of the government expenditures on education comes from other ministries. In Korea, 35 per cent of total education expenditures are paid for by the private sector, and in Indonesia, 26.4 per cent.

Increased educational expenditures were not only the result of the expanding educational systems. Costs increased out of proportion to the expanding enrollments. Annual enrollments, at all levels, in Latin America, Asia, and Africa increased by 6.2 per cent, 5.6 per cent, and 6.2 per cent, respectively, in the last decade. The annual rate of increases in spending was 12 per cent, 14 per cent, and 10 per cent, respectively.

But despite the large financial effort, educational sectors in developing countries have not been able to keep up with the increasing need for education. There is still an astounding number of school-age children not attending primary school. In 1968, 25 per cent of Latin American, 55 per cent of Asian, and 60 per cent of African children did not attend school. Even with a marked increase in adult literacy programs, the overall number of illiterates will increase.

Even these expanded educational activities have not helped many of those who had a chance to get some type of education. Many persons dropped out of school before being prepared for the world of work. Graduates of different levels of education found their training did not fit the economy's needs for specific labor, and training to use new technologies was also not available. Despite increasing expenditures, education often lost touch with society's needs.

The direct consequences of these failures in the last few years (after

1967) was a growing opposition to increasing education's share in public expenditures. This slowed the growth rate of funds for education. The problem of getting funds was also caused by the educational sector's disadvantaged position in competing for funds with other sectors.

Educational authorities have always been the least politically involved in their governments. Educators rarely have powerful positions in governments and are usualy not sensitive to overall national planning needs. They concentrate on keeping the educational system functioning for its own sake and are only sensitive to demands from within.

Also politicians consider education to be of secondary importance. This is partly because, like other human services, education's product is difficult to quantify and takes a long time to produce. Rarely do decisions in the educational sector have an immediate impact on outputs, unlike decisions in public works, industry, and commerce, where the impact is immediate.

In other sectors, planners wait for political decisions that determine directions of policy. The educational sector usually makes these decisions for itself. Its demands on the political system most often are only requests for more financial resources. But when these requests reach a level beyond which increased expenditures could disturb a country's social and political equilibrium, they are often flatly rejected.

The solution has two related aspects: finding new means of financing education and/or improving the efficiency of the education process. The role of efficiency is often overlooked in considering educational finance—the less efficient a system is, the more funds must be raised for any given level of operation.

There is a current emphasis that links developing new sources of funds for education with a search for efficient uses of these funds. This new emphasis is a clear sign that many developing as well as developed countries believe that the amount of resources allocated to education seems to be nearing a maximum.

This book will provide decision-makers with a clear idea of all the known methods for financing education, as well as their advantages and disadvantages. It also makes an understanding of the basic issues of increasing efficiency in education possible. The scope and organization of this book offers a survey of problems and old and new solutions in education, so that educationists in developing countries can see their particular problems in a larger perspective. With such an overview, educationists should be able to improve the decision-making process as it applies to the particular needs and goals of their country.

This book covers two aspects of educational finance: sources of funds for education, and the efficient use of resources in education.

Part I: The Sources and Financing of Education

Section 1, which opens with a short history of educational financing, shows that the many ways of financing education presently in use have been tried throughout history. This is followed by a discussion of the philosophical arguments that underlie many of the private and public methods of provision and financing of education. The section concludes with a discussion of the nature of taxes traditionally used to finance education—their economic and distributive impact, and their suitability for further financing education.

Section 2 presents methods of financing and distribution of funds to different levels of formal education and to various types of non-formal education. The section starts with a discussion of methods of distributing funds for education from the Central Government to local educational authorities, based on the criteria of equity of financial burdens and guaranteed minimum educational standards. The models described draw on the United States experience, but some of them can be adapted to developing countries with a federal system of government. This is followed by a summary of different methods of financing elementary and secondary schools from public and private sources. The summary is illustrated with selected examples from a comprehensive survey of the financing of education in developing countries.

Section 2 gives special attention to the financing of higher education. Monetary and power effects of different financial arrangements between government, institutions, and students are analyzed. Student Loan Institutions are discussed in detail because of their high potential in meeting the crisis of financing higher education. A Student Loan Development Bank that takes advantage of the national credit markets is proposed.

Most vocational education is provided outside the school walls and can be financed in a variety of ways. Section 2 discusses a framework for classifying types of vocational education and ways of financing them. The examples are taken from a comprehensive survey of over 50 nations. An analysis of special institutions for administering and financing vocational education—now in use in many developing countries—is also included.

The financing of non-formal education, such as recurrent education and educational radio and TV, is also discussed because these forms of education are becoming more and more important.

Section 3 presents different arrangements for raising funds and controlling their use. Because self-help methods for financing education are now being debated, this section analyzes the advantages and disadvantages of self-help. A new form of self-help, educational cooperatives, is also discussed.

The voucher system has been suggested to solve some of the problems of education in the United States. Its applicability to developing countries is minimal, but the general idea when adapted to the special conditions of developing countries may be useful. A discussion of its advantages and disadvantages is also included. The section closes with an analysis of external aid to education.

Section 4 presents different methods for forecasting resources for education. It also provides a model for the measurement of a country's or a province's effort in spending on education. This Index of Educational Funding can provide a ready instrument for comparing nations and provinces according to given standards of efforts.

Part II: Problems of Efficiency and Finance

Section 5 presents concepts of efficiency in education and develops a general approach for improving efficiency through intervention in the educational system. Every intervention has its costs and benefits. The tools of cost-benefit and cost-effectiveness analyses are discussed to help decision-makers choose a profitable course of action. But, while costs in the educational sector can be determined, benefits are harder to assess. Therefore, a general framework for evaluating educational outputs, followed by a discussion of the different methods of determining the economic value of education, has been included in this section.

Section 6 deals with ways of increasing overall efficiency and decision-making in national educational systems. Three areas were selected for discussion: educational planning and program budgeting; data for decision-making; and administration. The advantages and disadvantages of the different approaches are discussed, and suggestions are made for improving each of these areas in developing countries.

Section 7 presents particular ways of increasing efficiency. Because educational contracting is often considered as a means to link expenditures to results, this method is reviewed. The advantages, pitfalls, and the possibilities of applying this method to developing countries are discussed.

The way funds are distributed can promote or hinder efficiency. Different methods for fund distribution are therefore presented and analyzed, and suggestions are made for their application in developing countries.

This last section of the book closes with an Index of Educational Expenditures. This Index provides a basis for comparing the way different nations or regions spend on education, their preferences for different levels of education, and unit costs. Together with the Index of Educational Funding, they provide an analytical tool for evaluation of both aspects of educational finance: sources and uses of funds.

PART I

The Sources and Financing of Education

CHAPTER I

Educational Finance in Historical Perspective

THROUGHOUT history, educational finance has made constant, if erratic, progress towards extending education beyond the aristocracy.

Financial arrangements have ranged from simple payments in goods to priests for instructing youths in initiation rites to modern practices of acquiring and allocating funds, assigning responsibilities and organizing and controlling administration.

A historical analysis reveals what has been attempted and discarded, and why. A brief delineation of educational funding needs and, especially, the kinds of sources for educational funding will be included here. The descriptive account of methods for raising and disbursing funds for education will consider content and levels, units of organization, and responsibilities of government.

DELINEATION OF EDUCATIONAL NEEDS

Money is spent on education by particular groups in a society to satisfy specific needs. How much money is spent depends on their perception and acceptance of education's function to satisfy these needs, and on the natural wealth and economic ability of the society in general. Areas where specific needs were recognized for education in history include: religious, military, economic, political, and social.

Religious Needs There are countless examples of the need to teach the holy books in societies with religious emphasis: the ancient Hebrew *bet sefer;* Brahmin, Buddhist and Confucian temple schools in India, Ceylon, China and Japan; Moslem *khalwas, mektabs,* and higher *medress* schools for studying the Koran in Africa and the Near East; European early catechumenal, monastic, cathedral and, later, presbyterial or parish schools; Protestant schools of the Reformation; Jesuit schools of the Counter-Reformation; and, lastly, mission schools of many sects.

Military Needs The need to excel in warfare dictated the militarily-oriented training of Sparta and of pre-conquest Mexico. Chivalric codes demanded the same for the feudal nobility of Europe and the *samurai* of Japan.

Economic Needs Commercial transactions caused education to expand in ancient Egypt and Sumeria. Trained scribes were needed to keep accounts or ledgers, and to calculate weights and measures. With the rise of free enterprise in the Renaissance cities of northern Italy and the Hanseatic towns of the Baltic, abacus schools began to compete with schools of classical learning. The trading companies of the 18th century and, subsequently, the colonial empires, encouraged Western education in India, the Far East, and Africa to supply clerks, civil servants, and commercial staff.

Vocational education, common in Hebrew and Roman times, has been stimulated by exposure to trade and industrial expansion from the guild burgher schools of the 12th century to various kinds of vocational schools during the Industrial Revolution in Europe.

Political Needs A society with an open political system needs an educated electorate. The need to train statesmen has also created special schools, such as the 15th century Ottoman Empire's palace school for the best intellects in the Empire. In the United States during the late 19th and early 20th centuries, evening schools helped fulfill the political need of transmitting national-cultural values and inculcating patriotism to immigrants.

Social Needs In England in the late 18th century, Sunday schools were established to provide moral instruction for children of the working classes; and in the 19th century, the need for social justice for working-class children inspired activities of voluntary societies to provide schools, and national legislation to supply grants-in-aid. The Foster Act of 1870 was an example of such legislation. Solutions to the 20th century medical, social, and ecological problems call for societal support of scientific inquiry.

There are many instances where education has been less valued because of its interference in child labor practices (19th century), inconvenience, expense, lack of relevance (now), and its potential threat to the status quo.

NATURE OF SOURCES OF SUPPORT

Sources of educational support are expressions of people, individually or collectively. Government is a basic source of educational support at foreign, national, regional, and local levels. Religious groups have provided education since antiquity. Private enterprises—business, trade or agricultural organizations—have helped to provide funds; so have non-profit organizations, such as alumni, civic, and professional groups. The private individual, or the household, has responded to appeals and subscriptions. Tuition payments fees, services, charity, land and money bequests, student and teacher room and board, building materials, and books have been contributed to education.

A variety of techniques have been used to get resources for financing education from the above sources.

METHODS OF FUND ACQUISITION

Ample historical evidence indicates a great variety of ways to acquire funds. Only the most productive past methods will be considered here.

These include taxes, fees, philanthropy (bequests, endowments and foundations), disposition of public wealth, royal patronage, use of profits of private enterprise, and customs and excises. Others with generally limited ability to produce revenue include: services, loans, interest and savings, stock sales, lotteries, the establishment of special funds, appeals or subscriptions, fines, license fees, subventions, exemptions, foreign government gifts, reparations, and the use of proceeds from government monopolies.

Taxes

Through the centuries, taxes were the largest source of revenue for education, although they were not often directly imposed as a source of funds for education. A town tax to pay teachers' salaries from public expense existed in the first century A.D. Medieval university towns imposed clergy, wagon, bridge, and salt taxes. Henry VIII collected "first fruits and tenths" for Bible education. In 1638, a tax was collected in the colony of New Amsterdam (now New York City) to support a schoolmaster. Salt, stamp, and opium taxes helped finance schools in India.

The expanded use of poll and property taxes is a 19th and 20th century phenomenon. In 1739, the poll tax in Denmark was levied according to the taxpayer's status. An 1858 poll tax in Ghana failed when people refused to pay because Western learning seemed irrelevant. In the 1920's, poll taxes were also tried in South Africa and Tanzania.

The property tax, commonly used in North America today, was levied in Denmark in 1721 as a tax on land for payment of teachers' wages. This tax, known as the "hartkorn," was based on the land's productive capacity, or on its ability to support animals—measured in units of "hard corn." Property taxes in India in the 19th century were levied on the rental value of the land in rural areas, or upon houses in urban areas.

Taxes on banks in the United States in the early 19th century included those on state-bank paper money, on the banks' surplus accumulated profits, on deposits of non-residents, on agencies of foreign banks' bills, and on savings deposits. In 1910, in Quebec, Canada, corporate taxes were distributed according to the number of Catholic and Protestant shareholders of the company to the respective school boards. Other forms of taxation levied in various places include: taxes on railroad freights in Ghana; sales taxes, transfers, registrations and payroll taxes in the United States; and Denmark's tax on titles and one per cent levy on church income for teaching the poor.

In Mexico early in this century, one per cent of income above a prescribed figure went to secondary school improvements. Pre-World War I France taxed securities, doors and windows, stamps and alcohol, along with presumptive income—as measured by amount of rent paid—as sources of general revenue from which the Central Government paid teachers' salaries. Germany also had a variety of taxes for general revenues which were applied to school appropriations. Such taxes were imposed on mineral water, beer, champagne, candles, salt, sugar, income, sales, auto, inheritance, racing, betting, and amusements. During the Third Reich, a graduated citizenship tax was also imposed.

Payment of Fees

This is one of the oldest and most consistent methods used to collect funds. Fees for instruction have existed in many cultures. Primitive Indians paid a wise man to teach them dances for exorcising evil spirits. Greek sophist lecturers charged per seat; the Romans charged tutorial fees; and the Japanese collected payments of dried sardines, sweets, and cloth for *terakoya* primary schools.

Collecting fees from the pupil at early sophist Greek lectures also served to institutionalize the formal school arrangement. Graduated tuition fees based on ability to pay were charged in 18th century Prussia, where the community was responsible for providing for the poor. In Calcutta in 1731, the Bellamy's Charity School received rents from the government for using their building to hold court. Universities have always depended on tuition fees for much of their support, as well as fees for matriculation, lectures, medicine, food, examinations, graduation and degrees. In Austria between 1880-1930, lecture room fees were earmarked for the purchase of scientific equipment. In Prussia of the early 20th century, a professor was entitled to 80 per cent of the proceeds of the fees collected in his courses.

Philanthropy

Both religious and secular philanthropy have been an important source for acquiring funds for education.

Religious Charity and Bequests Charity and bequests have furnished money for education, especially through the church. Traditions of Brahmin and Moslem faiths obliged parents to provide for religious learning, but forbade fees. Instead, parents could donate gifts; but the obligation to teach religion fell upon the temple, and schools were established within or near it. Wealthy rulers or benefactors supported Moslem students at secondary school *medresses*. The same was true for Buddhist schools in India, Ceylon, Malaya, and Japan. The history of the Christian Church shows that financial support was considered obedience to divine will. Theodolphus, Bishop of Orleans under Charlemagne, decreed that "in every village and in every estate in his See, priests should arrange for schools to which any Christian father might send his children to learn their letters without payment of a fee." Bequests for the continued chanting of Masses for the Dead began the chantry schools of the Middle Ages. The school systems of Western Europe, Japan, Australia, and countless others evolved from existing religious schools when nationalism became a world force.

Much missionary activity of the 17th, 18th and 19th centuries in Africa, South and North America, and Asia was supported by donations, church funds, and the efforts of dedicated believers. Protestant groups, such as the British Society for the Propagation of the Gospel in Foreign Parts, the Wesleyans, the American Baptist Mission Board, and the Church of Scotland operated educational stations in distant surroundings. The Jesuit, Franciscan, and other monastic teaching orders were active in Latin America, Eastern and Western Europe, North America, Ceylon, and the Philippines. Missions in Nigeria attempted to be self-supporting by farming. After the Industrial Revolution, religious societies in England created Sunday schools and charity schools to educate the poor.

Non-religious charitable educational endeavors are less common. But there were collection boxes at inns for schools for the poor in 16th century England. The communal Bureaux de Bienfaisance or Welfare Chests of 19th century France and Denmark provided lunches, aprons, and shoes to the need school-child. In the early 20th century, the Turkish Republic's Red Crescent and Society for the Protection of Children provided food and medicine to school children.

Besides religious charity support, endowments and foundations have been important in financing education.

Endowments Records in Greek Asia Minor tell of a bequest for the perpetual endowment of a school for the free citizens of Miletus that provides for administration and salaries. Ptolemy gave an endowment to the library at Alexandria; Roman emperors endowed chairs at the museum there. In 1448, Magdalene College at Oxford University received an endowment to maintain a professor. A prime source of income for the Jesuits during the 16th, 17th, and 18th centuries was rents from endowed lands. In the early 18th century, Frederick William of East Prussia endowed a national fund of 50,000 thalers to assist needy schools in paying teachers' salaries, or in erecting school buildings. In the 18th century in India, provincial school records list innumerable endowments and legacies, including the Officers' Funds and Soldiers' Funds, used to support their children at the Lower and Upper Orphans' School.

Foundations After the Industrial Revolution, individual families which had amassed large fortunes set up foundations to support education. Even in Roman times, Trajan had set up municipal foundations to support the needy. The George Peabody Education Fund, founded in 1867 to advance education in the American South, is more of a prototype of today's non-governmental, non-profit organization, such as the Carnegie, Ford, Mellon, Sloan, and Rockefeller Foundations, and the Fund for the Advancement of Education.

Disposition of Public Wealth

A significant method of acquiring resources for education was selling public wealth. Land was granted or sold by Henry VIII and Edward VI when Catholic monasteries and lands were confiscated and later used for Anglican schools. Denmark, too, confiscated Catholic properties through the Church Ordinance of 1539 and used dissolved church foundation revenues and old endowments to support Lutheran schools. In 1641, Boston designated Deer Island, an island in its harbor, as land to produce school income. In 1790, Nova Scotia set aside a 1200-acre grant to support teachers. In 1791, Upper Canada received the Clergy Reserve Lands to support Church of England schools. In 1826, Australia set apart one-seventh of the crown lands in each county for school income. In 1841, the United States Congress gave 500,000 acres to some states for internal improvements to facilitate transportation of troop movements. This was later used to produce income for schools. Congress also gave the State of Indiana saline land so that income from salt springs could be used for education. Sections of land in territories of the United States were commonly reserved for yields to church and schools. The culmination of land grants in the United States was the Morrill Act of 1862. Federal land was given to states to provide an endowment fund whose investment yield would encourage agricultural and mechanical research at universities. Another disposition of public wealth was the return to the states of a national treasury surplus in 1833-1837 by Andrew Jackson. Much of this was invested in common, permanent school funds, and it produced income for some years.

Royal Patronage

Chairs at Alexandria were endowed by Roman emperors. Vespasian contributed to teachers' salaries throughout the empire. Charlemagne maintained a palace school. Sinhalese kings in Ceylon donated gifts of land, villages, and grain fields during the seventh to the 14th centuries. Nepalese kings supported Buddhist education. Feudal Japanese lords were responsible for schools and donated capital and operational costs for five years before village notables and villagers were obligated to accept costs of upkeep. During the Renaissance, the Italian royalty maintained court boarding schools, such as the Duke of Mantua's school. French kings contributed prizes, museums, and libraries for private adult study groups. Moslem custom dictated that local rulers place students in homes of acquaintances free of charge. African and Indian princes made land grants to voluntary associations to build schools. In 1861, Malayan royal chiefs tried to establish vernacular schools by contributing to a language institute where their contributions were to be matched by the Indian government.

Profits from Private Enterprise

The 16th and 17th century merchant trading companies established religious schools similar to English charity schools. The Portuguese companies had schools in Ghana; the Dutch East India Company, in New Amsterdam and in Ceylon; and the British East India Company, in Canada, India, Malaya, and Ceylon. In 1837, the English Board of Trade established a National School of Design whose exhibits in 1861 stimulated Parliament to appropriate 200,000 pounds for the encouragement of science. In 1802, English cotton mills which employed apprenticed children were obliged to teach them reading, writing, and arithmetic. In the first part of the 20th century, the Ghanian Cocoa Marketing Board contributed two and one-half million Ghanian pounds for secondary school development, continuing a tradition of contributions by African traders to voluntary schools. In 1923, Malayan estates and plantations were required by law to provide a school if ten or more children of school age were resident. Turkey also expected private companies to provide facilities for school children of workers. The Constitution of Mexico of 1917 ordered agricultural, industrial, and mining enterprises to provide schools for workers' children. Today, it is common for East European factories and co-ops to provide nursery school facilities to workers' children free, or for small fees. U. S. industry has executive training programs and provides scholarships. International oil companies have also had many school and training programs.

Customs and Excises

In some countries, educational provision has been dependent upon revenue from customs and excises. Denmark assigned custom duties in 1708 to the town chest to pay teachers to teach the poor. The duty on wine imported into Halifax, Nova Scotia, in the late 18th century paid the schoolmaster's salary. The Custom and Excise Act in England of 1890, the "Whiskey Money Act," for providing technical instruction funneled money into county boroughs for relief of local tax burdens. The U.S. state of Nevada used proceeds of toll rates and bridges for their school fund. Ghana and Uganda today use duties on exports and imports to pay for recurrent education expenses.

METHODS OF FUND ALLOCATION

Accepting education as a national priority is a 20th century phenomenon. So, too, is the awareness that piecemeal appropriations are inadequate for the demands of capital investments and recurrent expenditures. Such appropriations allow little expansion of facilities or opportunities for the general population. General taxation of the late 19th century implied the beginnings of a commitment to education as a national investment. In this century, willingness to allocate resources to educational needs has increased constantly. The various ways these funds have been distributed and their various levels of effectiveness is significant.

Student Allowance

Living allowances were given to Hebrew students at the Jerusalem Academy in the first century. In 1253, the medieval city of Ypres gave students benches and straw—with no extra charge for medical blood-letting services. Room and board was provided for students of higher education at Ottoman Empire *medresses* of the 15th century. In addition, their students were exempt from military service. In 1648, students at German academies received free board. The Dutch East India Company sent able Ceylonese students to Leyden University at company expense in the late

17th century. In 1871, at the Calcutta Medress, an Arabic Persian language and Mohammedan school, a student allowance was given.

Scholarships

These have been commonly provided by local, state, and national agencies; private companies and organizations, and universities. In the seventh century, Japan sent students abroad for learning. Scholarships were awarded for room, board, books, stationery, tuition and fees at the Ottoman Empire Galatasaray Lise secondary school for Moslems and mixed nationalities of the late 19th century. The British Colonial Welfare and Development Acts of the 20th century provided scholarships for Ghanian and Tanzanian students.

Educational Performance Contracting

Another technique for disbursing funds is through educational performance contracting. Funds are generally paid at completion of agreed-upon results. A performance contract exists from the Middle Ages specifying the conditions, expectations, and arbitration procedures of an agreement for a master to teach reading to a banker's sons. Hints of commonly unpaid tuition are given. Performance contracting in elementary schools was in effect in 19th century England. Payment by results was also tried in Ontario, Canada, during the same period.

Grants

These grants have been a basic method of allocating needed supplementary funds to local school districts, regions, and institutions in many countries. There have been many types of grants, used singly or in combination. These include: results, block or fixed and proportionate, specific subject, capital equipment, matching, attendance and per capita, classification, transport, fee, conditional, salary, and direct teacher.

Results Grants Grants or payments on the basis of results originated in England with Lowe's Revised Elementary Code of 1862. The idea was later exported to the British Empire during the late 19th century. Grants were made to schools based on the number of students passed at periodic inspections, often in combination with other types of grants.

Block, Fixed and Proportionate Grants Block or fixed grants are a specified amount granted for a specified time. In 1860, India gave simple fixed grants for five-year periods. Nigeria gives a fixed sum to the National Universities Commission. Proportionate grants are fixed, but based on a percentage of a school's expenditures.

Specific Subject Grants Specific subject grants were awarded in Ceylon in 1812, for reading, writing, and arithmetic; in Ghana in the 1870's, for industrial arts; in Malaya, in 1899, for teacher training and commercial subjects; and in England, in 1902-1914, for laundry and dairy studies. These were designed to stimulate the teaching of particular subjects whenever the need for that type of training existed.

Capital Equipment Grants These were used in England in the 18th century when a grant of 20,000 pounds helped a subscription society build a school for the poor. In 1829, Lower Canada received half the cost of erecting schoolhouses from the government. In the 1940's, South African farmers or missions received a specified amount per classroom when the school was used as a school for Africans.

Matching or Stimulation Grants Matching grants operate on the premise that there is greater incentive for receiver involvement if equal sums are forthcoming from a larger authority. Such grants stimulate local initiative and responsibility.

In 1795, the New York State Legislature appropriated 20,000 pounds, to be divided among districts—provided they raise an amount equal to their distributive shares. In 1814, the English government through the Kildare Peace Society matched local sums raised by that group in Ireland. The 1854 Dispatches of India stipulated that grants may not exceed amounts locally raised. In the 1880's, Western Canadian provinces required that their grants be matched by sums raised in intermediate areas, such as county units, with the purpose of equalizing educational opportunities over wider areas than townships.

The Smith-Hughes Act of 1917 provided federal funds for vocational education in public schools to be matched by state funds, as did the Smith-Lever Act of 1914 which was directed to agricultural extension services.

England has used matching grants for medical treatment centers, play centers, adult education, transportation of elementary school children, schools for delinquent children, and university scholarships.

Attendance and Per Capita Grants These fixed grants have been based on enrollment, average attendance, or upon the number of pupils attending examinations. In 1853, England used per capita grants to supplement a school's income. These were based on three-fourths of the children present during inspection on three rudimentary subjects. In the 19th century, the Ceylonese government paid grants to mission schools, based on the average number of pupils. From 1902 to 1914, England used fixed grants based upon average daily attendance. From 1920 to 1950, South

Africa granted an amount to schools based on 110 per cent of the number of pupils in attendance the previous year.

Classification Grants These depend on evaluation of a school according to several criteria: teacher quality, subject matter, efficiency, and, at times discipline. In 1882, Nigeria used discipline. In 1899, Malayan schools had three levels of efficiency. In the early 20th century, Nigeria and Ghana also used efficiency as a criterion. In addition, vernacular schools received half the amount obtained by English schools.

Transport Grants Since 1920, these have covered transportation costs for students in Tanzania, free motor transport to mission schools in southern Sudan, free railroad travel to Denmark's students, transport of elementary students to and from school in England, and busing of some parochial school children.

Fee Grants Fee grants were attempts to eliminate tuition by reimbursing schools which had eliminated it. In 1891, the English government paid ten shillings per year per child to elementary schools which ceased to charge fees.

Conditional Grants Throughout history, special conditions have prompted grants that recognized specific immediate needs, or particular goals. In the 1830's, English grants stipulated that Scripture reading be mandatory in recipient schools. India, in the Dispatch of 1854, insisted that payment of some fees be a condition of receiving grants. In 1854, South Africa made grants to schools teaching industrial arts, where master craftsmen were in residence, to promote the teaching of industrial arts to Africans. In 1876, England granted aid to sparsely populated areas. In 1882, India made grants to backward areas, to the poor, to girls, and to lower castes. From 1902-1914, England granted aid to special schools for the deaf and handicapped.

Salary and Direct Teacher Grants Salary grants are based on a school's expenditures for wages. Central Authorities often grant a percentage of total salaries to a school. From 1880 to 1930, the Central Government of West European countries often absorbed the entire cost of teachers' salaries. In addition to straight salary grants, teachers have received special aid for hardship areas, superior qualifications, seniority, travel, teaching of special subjects or difficult children, and living allowances.

SUMMARY

Some tentative conclusions emerge, even from this brief description of the history of educational finance. Educational finance is still an area of great experimentation. There has been no steady pattern in history, except the expansion of provision of education for the masses and increased state acceptance of financial responsibility. Most methods of securing funds have ample precedents. Some of the historical experiences with these methods of financing are useful lessons to those advocating new forms of financing.

CHAPTER II

Public and Private Education: The Philosophies Behind the Issues

FINANCING and providing education are essentially separate functions: those who finance the system need not control or even influence its provision or administration. These two functions can be carried out by government, market forces, or a combination of the two. An individual's preference for one mode of financing and provision of education over another involves deep feelings toward the function of government in society.

This chapter will focus on the justification for government intervention in education. It will give arguments for and against the different modes of financing and providing education. The varying possibilities of distributional equity, social cohesion, and equality of social opportunity under these modes will be presented.

JUSTIFICATION FOR GOVERNMENT INTERVENTION

Government intervention has been advocated to increase overall economic efficiency and to foster distributional equity.

Economic Efficiency—Externalities and Market Imperfections

When one person's actions impose uncollectable costs on others or yield non-chargeable benefits, these are called externalities. Education produces positive externalities of both an economic and non-economic nature. Private external benefits include: the transmission of literacy, aesthetic and cultural values, the creation of a politically sophisticated and informed electorate, and additions to knowledge through research. The public economic benefits include: greater productivity and human capital investment which are needed for national economic growth.

These positive externalities justify substantial government intervention. If decisions on educational expenditures are left to the individual who cannot derive all of the benefits, he will tend to under-invest in education. Because society receives benefits beyond those accruing to the individual, it must, therefore, share part of the costs and also insure the continuous supply of those benefits by providing education.

Market imperfections can occur when the information system is weak. This causes decisions based on imperfect knowledge that do not produce an optimal allocation of resources. Faulty information on costs and benefits of education's outputs is common. Labor markets do not always reflect changes in demand for occupations. There is also a long time-lag between the decision to educate persons for a given occupation and their actual entry onto the job. The risks of education then become very high and cannot be guarded against because "human capital" is not accepted as collateral.

In most cases, education is similar to the telephone and electric companies which develop natural monopolies to produce the commodity economically. Because of the important social benefits of education and because consumers have little power in such a monopolistic market, government may be the best manager of a natural monopoly, such as education.

Distributional Equity

Most countries consider education a human right. A society must insure all members access to education, regardless of socio-economic class, geographical region, or any other classifications. But, in a free market, education is not always available to the poor, and government assistance is essential.

FINANCING OF AND PROVISION FOR EDUCATION

Financing of and provision for education are essentially separate functions—those who finance the system need not control or even influence its provision or administration. But financing decisions very often affect a system's actual working. This is because of the financing authorities' expressed intent or, more often, the unintended consequences of financial decisions and constraints.

There are four modes of financing and providing education:

—*Total government control*—both financing and provision

—*Total private control*—both financing and market provision

—*Government finance and market provision*

—*Private finance and government provision*

It should be noted here that even when both financing and provision are private, government can intervene with legal controls, such as inspection, licensing, and laws governing curricula and salaries.

The individual has two values guiding his judgment of the usefulness of these four modes: the type of service; and the way it is made available. The preference for a mode of financing and provision of education is related to one's deep feelings toward the function of government in society. Some people attach a greater value to a market organization, even though service provided by the government is good. The reverse is also true.

THE PHILOSOPHIES BEHIND THE ISSUES

The arguments for and against different modes of financing and provision should be considered within the framework of three philosophical attitudes. These question whether people know what kind of education they want; and whether they should and do have the power to express and to fulfill their preferences.

Do People Know What Kind of Education They Want?

Those for total government intervention in financing, as well as provision, feel the government must protect children from unknowing parents. These persons believe a buyer is not always qualified to judge a commodity, particularly, education. Thus, open competition in education seems undesirable for both the individual and society. They believe most parents are ill-informed, subject to commercial pressures, unwilling to make decisions, and likely to under-invest in education—all resulting in superficial, not basic education.

Education itself molds choices, tastes, and preferences. Its future demand is a function of education provided in the past. Parents are limited by their own experience. Total government financing and provision allows the government to break the cycle of poverty and better educate those who would not independently "buy" such quality.

Some proponents of government financing and provision also see no effective and reliable method of providing the consumer with information to help him function better in the educational market. They feel that people do not know what they want and must, therefore, have their true preferences expressed by others, so that their ignorance hurts neither their children nor society.

The opponents of government intervention want a completely free market with total private financing and provision. They maintain that education is a purchasable commodity where market rationality applies as with all commodities. They assert that total government provision fosters ignorance by depriving people of the exercise of their rational choice.

For the few cases unable to take advantage of a market system, legislation could safeguard children from parental ignorance. Moreover, the argument of protectionism can be used against supporters of total government intervention by asserting that children need protection against incompetent administrators and teachers who would be making decisions. Those for a totally free market admit that people make mistakes but say that a Minister of Education becoming the "parent" for everyone is unacceptable. They feel that infringements upon personal freedoms would be intolerable, and that it might be better for each parent to be a "Minister of Education," receiving the same information as government officials. They believe the family institution is fundamental and must be allowed to choose the best education for its children.

Those for government financing and market provision take most of their arguments from the proponents of the market system. This assumes the market's effectiveness for delivering education and the individual's primacy in asserting his preferences over those of society. This approach does not oppose government involvement. Its thrust is government helping individuals to express their preferences in the market.

Do and Should People Have the Power to Express Their Preferences?

The proponents of total government involvement say that the people do not know what kind of education they want. They assert that the government should direct their preferences through elected or appointed officials.

Their opponents obviously believe that majority rule can be tyranny and that each person should have the power to express his preferences for education directly, rather than through the medium of politics. They assert that under the free-market principle a person who buys his own education has more control over what he gets than if he gets it through taxes and someone else buys it for him. By being forced to buy his education through his taxes, he is subordinated to the supplier.

The self-interest of those who supply state education fosters continued protection of their long-established educational monopoly. Suppliers of education, protecting their livelihood, have a disproportionate interest compared to the diverse interests and demands of consumers. If government intervenes to help the supplier, this gives suppliers a disproportionate influence over consumers. Suppliers mold rather than respond to public opinion. Government intervention reduces the individual's power to express preferences. Those planners for government intervention say this should be done.

Those advocating government financing and market provision again follow the market proponents. Power to express preferences must lie with every individual, but the government is important in strengthening that power of expression so that preferences are fulfilled.

Do and Should People Have Power to Fulfill Their Preferences?

The right to have and express preferences is a basic question. Its importance depends on this third question—whose preferences prevail? How much power do people have to fulfill their preferences? Do they really have much freedom of choice and action? These questions are basic to the issues of equal access to education, equality of social opportunity, and to social cohesion through education.

Equal Access to Education There are three alternatives for equalizing access to education. These varied approaches derive from the different ways of viewing the role of "purchasing power" in achieving equal access.

The proponents of government financing and government provision always believed that providing equal access was a social responsibility. No one should be denied education because he cannot pay for books or materials. Fees should be abolished, and the public schools should be the government's responsibility. The idea of equal opportunity of education came into being in 19th century England and resulted in compulsory education. Compulsory education required that everyone take advantage of the opportunity.

This compulsory approach provides education and eliminates the problem of equalizing purchasing power. No one buys education—it is free to all. Without purchasing power, individuals cannot fulfill preferences.

Proponents of the market approach, free in both financing and provision, obviously differ. They agree in principle on the need for everyone's equality of purchasing power, but they oppose government financing and provision because they say it does not do what the government says it does.

First, education is not free. People pay indirectly through taxes rather than directly in the market. Inequities of purchasing power are not eliminated. Rich communities can provide better education than can poor ones. The rich can also choose private rather than state education. More forms of education are open to them than to the poor.

There is also the argument of double taxation. Families not using the state system must pay again in the private system. They are not utilizing their education taxes. It is argued that double taxation forces the poor to use the state system because they cannot afford to pay twice, even though they would rather have another type of education. Also, many middle- or lower-middle income families who have to use the free state education system may accept a lower end result of education than they would if they paid the full costs of education.

Proponents of the third strategy—government financing and market provision—believe that equalization of purchasing power can best be obtained with their approach. The totally private approach cannot, without also eliminating purchasing power as the government approach does. Government can give subsidies to individuals so that the poor have as much purchasing power as the rich but are free to use it as they wish. Thus, government financing and market provision equalizes the power to fulfill preferences, which is impossible in both the totally free market and government provision alternatives.

Equality of Social Opportunity Through Education Equality of opportunity is measured by the output of education, not the input (money spent). Its concern is the extent to which individual preferences for specific outputs are met through the different policy alternatives. What matters is, not how "equal" the school is, but whether the graduate is equipped to compete with others, regardless of social origins.

Given the goal of equality in social opportunity and the assumption that schools should significantly help meet it, advocates of both government financing as well as government provision insist that equality of social opportunity can be achieved only when schools break the poverty cycle. As their arguments on knowledge of preference and power of expression indicate, they believe total government intervention in education is necessary. Only when knowledgeable decision-makers control the educational system through curriculum control, teacher quality, and resource-use and provide it "free" in order to equip each child adequately to compete in the labor market will equality of social opportunity result. The poor cannot break the poverty cycle; government control of education can do it for them.

Proponents of the government financing but market provision also believe that government should help education achieve equality of social opportunity, but not by total intervention, since it has not succeeded thus far in achieving the objective of equality. At the level of local government, the disparities are even sharper. Rich communities with a more lucrative tax-base give their governments more to spend on education than do poor ones.

Advocates of government financing but market provision believe these problems can be solved through their approach. Because it equalizes buying power, only schools that effectively prepare a child would survive. Such schools might use radically different approaches for advantaged and disadvantaged children. Because children must be educated differently to equalize their opportunity, the flexibility of this system makes it successful and the rigidity of government provision, unsuccessful. The poverty cycle can be broken in the market because these people can express their preferences. The government's only function, these advocates assert, is to insure equal power of expression. Equality of social opportunity will follow.

Social Cohesion Besides equality of access and equality of social opportunity, the issue of social cohesion must be considered to determine whose educational preferences should prevail. The idea of a shared code of conduct, belief, and values may be vague and could range from the close-knit Israeli *kibbutz* to a caste system. Education's contribution to a sense of social cohesion is generally in fostering citizen consciousness and instilling common values. The various strategies discussed have different orientations to this problem.

Proponents of total government intervention insist that only their type of control will maintain social cohesion as the important common goal it should be. Schools provided by the market may foster social divisiveness, with no guarantee that common values will be emphasized. In the free market, schools may have specific social, economic, and religious approaches and thus provide a narrower education than in government schools. Government intervention advocates assert that schools provided through the market give individual interests precedence over social goals which they feel would not produce a cohesive society.

Market provision advocates—for both private finance and public finance—assert that social cohesion has practical limits. Barriers of religion, ethnic identity, and economic status differentiate populations, so it is unrealistic to expect schools to provide social cohesion to a major extent. They argue that one need only consider the existing separatism in many countries to see that government provision schools do not create the social cohesion advocated for them.

Advocates of government finance and market provision believe their position is on middle ground. Government financing may be legislated to foster some social cohesion but care should be taken so that there will be minimal infringement on freedom of choice.

CONCLUSION

The previous discussion indicates that preference for a given mode of financing and provision of education is greatly influenced by the way leaders and citizens view the role of government in society. Preference is a deciding factor when all other things are equal, but preferences can be overruled when costs of satisfying these preferences become too high, or when these educational needs collide with other, more important needs.

It is important, therefore, to review existing patterns of financing and provision as neutrally as possible, keeping in mind the philosophical issues raised in this chapter.

CHAPTER III

Review of Taxes Commonly Used to Finance Education

EDUCATION is primarily a public expenditure. Financing education is closely connected with a country's ability to raise tax revenues. The composition of tax revenues varies from country to country. But, for developing countries as a group, the largest proportion of fiscal revenues comes from indirect taxes. These are, in order of importance in the structure of total tax revenue: taxes on international trade; taxes on excise and fiscal monopoly profits; sales taxes; and taxes on internal transactions. There are also three direct taxes: corporation taxes; personal income taxes; and property taxes.

Analyzing the financing of education need not include a detailed study of the general sources of revenues for all public expenditures because education seldom exceeds 20 per cent of total Central Government budgets. But it is important to evaluate particular taxes that are either earmarked for education, or are the main source for educational expenditures.

Because property and sales taxes are the most frequently used taxes to finance education, they are the focus of this chapter. Special attention is given to the value-added tax which has been proposed as a new way to raise educational revenue. These taxes are appraised according to several criteria to enable decision-makers to evaluate their usefulness.

CRITERIA FOR EVALUATING TAXES IN GENERAL AS SOURCES OF FINANCE FOR EDUCATION

The effectiveness of different taxes as sources for education involves evaluating the taxes according to the following criteria: adequacy, stability, growth, compliance and administration, impact, incidence, and neutrality.

Adequacy A given financing method must provide the money needed to operate the educational system satisfactorily.

Stability Because the educational process is continuous, availability of funds cannot fluctuate widely without adversely affecting the educational system.

Growth Because a natural increase of population usually increases the demand for education, sources of funds must grow so that the quality of education does not deteriorate.

Compliance and Administration The effectiveness of providing funds from taxes often depends on the ability to enforce the taxes without incurring excessive costs.

Impact How easily a taxpayer can shift his burden to someone else, a form of tax avoidance, has significant social and economic effects which must be considered in evaluating the tax's use in a country's tax system.

Shifting a tax changes the levy's initial impact by changing market prices of whatever is taxed. Tax is shifted either forward or backward: forward, as higher prices to consumers; backward, in lower prices to suppliers. The shifting can occur within a sector and between sectors. Shifting between sectors occurs when a tax imposed in one sector causes a reduction in supply of that sector's output which tends to drive up the price of the output in another untaxed sector.

Incidence Whoever bears the ultimate burden of the tax bears the incidence. The ultimate burden of the tax is related to the tax's distributional effects. A major concern of incidence theory is to determine the real income of various groups under a specific tax. More than just a matter of relative price changes, incidence analysis deals with real income changes. This distinguishes it from impact analysis. Incidence must be judged by the principle of equity. Equity involves a value judgment. Each society and, ultimately, each person may differ in attitudes. But there are various standards. Those usually used are:

—*Equal treatment of equals*—persons in the same circumstance are taxed the same amount.

—*Distribution of the overall tax burden*—based on ability to pay as measured by income, by wealth, and by consumption.

—*Exclusion of the lowest income groups*—because they have no taxpaying capacity.

—*A progressive, overall distribution of the tax relative to income*—based on the rise of tax capacity relative to income.

Neutrality This indicates how the tax affects economic decisions. The less distorting its effect, the more neutral its effect on decisions.

These seven criteria can constitute usable standards by which to evaluate financial plans.

EARMARKED TAXES FOR EDUCATION

Revenue for education can come from the general budget as either a fixed or a variable proportion of the total revenues. When the proportion is fixed, this is called earmarked revenue. When revenue is derived from specific taxes for education, these are called earmarked taxes.

Earmarked taxes should only be used where they serve as proxies for fee payments because payments for a service should be linked, as much as possible, to its users. (If motorists pay for the use of highways, they will adjust their consumption accordingly. Because it is difficult to have toll gates at all points, a gasoline tax is imposed as a proxy for using the road.)

This does not work for education. No special type of taxes can serve as proxies. Theoretically, earmarked taxes should therefore not be used as revenue sources for education. But when education is financed from general revenues, and revenues fluctuate significantly or the Ministry of Education is weaker than other ministries, fluctuating resources for education may result. In this situation, earmarking taxes or assigning a fraction of earmarked taxes may be justified when the types of taxes produce fairly stable revenues. This allows the continuing flow of resources and expenditures necessary to maintain a certain quality of education.

From the general viewpoint of public finance, earmarked revenue for education is not desirable because it introduces rigidity in the allocations of the budget. But when decisions on education's share in the budget become arbitrary and do not take into account educational needs, it may be necessary in some political contexts to insure a minimum amount of expenditures as a "safety net" to protect resources for education from struggles between ministries.

Earmarking may also be a way to "sell" a new tax to the public. Citizens who have little confidence in their government may be more willing to accept a new tax if they know where the money is going. Furthermore, education is important to most people, and they are often more willing to be taxed a little extra for education than for other purposes.

ANALYSIS OF PROPERTY AND SALES TAXES

When education is not financed from Central Government budgets but from earmarked taxes or from state and local budgets, property and sales taxes are the major source of funds for education.

Property Taxes

The efficient and equitable raising of revenue to provide government services has always been an economic concern. One of the oldest ways to raise these funds is by means of the property tax. This is broadly defined as a tax on all tangible wealth with exchange value.

Society has long held land as highly important, compared with other means of production. In feudal times, land was a logical base for all taxation. Revenue for governmental services was expected from land because it seemed that its owner could easily get a surplus return from it. Land was easily assessed and the tax could be collected immediately.

With the expansion of commerce and industry, the relative importance of land changed. Agricultural land lost its important position in national wealth. Property did not. Property became more loosely defined as tangible wealth with exchange value. Defined this way, the property tax remained important. It applied to tangible wealth in both agricultural and urban areas.

Today, there is no special economic reason for subjecting land to differential taxation, but immobile property is still taxed at higher rates than mobile property. Probably, the difference remains simply because a tax on land and immobile property is difficult to evade and is more easily administered. It may also involve less severe inter-governmental competition for tax sources than other forms of taxation. The property tax is one of the oldest because of its relative simplicity and stability in raising revenue.

Property taxation is used throughout the world, especially in those countries once under the influence of the British tradition of property taxation. The property tax is used more by local than Central Governments because jurisdictions are clearer. Local governments typically have limited taxing powers and must, therefore, rely more on readily accessible revenue when funds cannot be obtained from Central Governments.

Generally, those countries without some form of property tax do not have much autonomous local government. In the United States and elsewhere, the importance of this tax varies with the strength of the local government. Such a tax is maintained to retain decentralized decision-making, and owing to the democratic attractiveness of home rule. But this is not the major reason for its importance. The basic need for local governments to raise revenue and the reasonable efficiency of the property tax explain its practical significance.

Rapid population increases, growing urbanization, and longer compulsory school attendance have increased demands for local services. The high costs of these services, especially the rising cost of education, test the property tax's effectiveness. It consistently supplies high proportions of funds needed, especially in developed countries. This is due in part to the ease with which local tax authorities can vary amounts collectible from a property tax and in part to the responsiveness of the economic base of the property tax. Revenues from the tax clearly show a high "GNP elasticity" —tax revenues rise by more than one per cent when there is a one per cent increase in GNP. In recent years, this high "GNP elasticity" has reduced criticisms of the tax. Its continued existence is explained as much by its practicality as by its administrative expediency, politically desirable home-rule basis, and general flexibility.

Nature and Characteristics of the Property Tax

The property tax is based on the *ad valorem* or valuation of an asset. Such taxes are non-personal and recurring. They are imposed upon the owners or users of property. The uniformity and generality of the tax have diminished recently because of difficulties in administering such taxes in increasingly complex local jurisdictions, each with its own special needs and abilities. Differences among types of property taxes are evident when comparing tax-bases among different countries.

Such differences indicate the unresolved problem of defining "taxable property." In many countries, the ambiguity has partly caused the tax to evolve into a levy on only one specific type of property: real estate—land and permanent improvements to land. But real estate and improvements are quite diversified. This causes property taxation to apply to a heterogeneous aggregate, which creates major difficulty in defining the property tax-base.

In order to compare and measure widely diverse assets, there must be some common element as the basis of what is taxed. The concept of property suggests these assets should be physical things. Limiting the property concept (at least in taxation) to physically real things is obviously convenient. Assessing non-physical property is highly subjective. Property that consists of only physical things can be assessed on a strictly objective basis. An asset's value is determined by its market exchange value, which is a relatively objective measure.

Assessment Techniques

When property consists mostly of land, taxes have been assessed according to three concepts: the physical unit, income, and rental value.

Under the physical unit concept, land is assessed per unit of surface, regardless of the land's productive capacity. Such a tax is most suitable where land is plentiful and is applied either at a uniform or classified rate.

The uniform rate is best applied where the taxed land is homogeneous, each unit having the same value. The classified rate differentiates such qualities as district, type of irrigation, or economic use of land. The physical unit property tax, at a rudimentary level, combines the simple area approach with the more advanced one of assessing land value or produce.

Under the income concept, the taxable base includes not only the land's income but also that of other factors of production. These include labor value of the cultivator and his family and the return on capital invested, as well as improvements on land or equipment. There are several types of income-based taxes. The base can be determined by a gross yield (or income), or a net yield (or income). Another form is taxing only produce brought to market.

Under the rental value concept, the base used for calculating property taxes is derived from its rental value. This is either the payment for using the land, commonly called annual rental value (ARV) in the British tradition, or an equivalent capital sum, commonly called capital value (CV), practiced in the United States. The major difference here is that the annual rental value refers to only current income, while capital value refers to both current income and wealth. This difference is explained by the treatment of vacant land. ARV entails a tax based on present, actual use of property; therefore, vacant properties are not taxed. CV is the capitalized value of expected net returns from property at its highest legal profitability. This does not presuppose present use; therefore, under the CV concept, vacant land is taxed.

A workable method of assessment is needed for both ARV and CV bases. This requires the determination of a "normal" or "long-term value," not necessarily the actual value of any particular time.

Buildings can be assessed according to ARV and CV concepts, and also in terms of comparative sales (based on the value of similar buildings being sold in the market) and reproduction costs (based on the present cost of constructing a similar building).

Other Characteristics of the Property Tax in Theory and Practice

In theory, property taxes are generally characterized by their gross property base, an *ad valorem* measurement, and impersonality. Property taxes are impersonal in that they are not applied to people. There are possible variations based on ability to pay, but these are instituted on a class, not an individual basis. In practice, these characteristics are not very common or uniform. A country's property tax is not a single uniform tax, but a consolidation of numerous levies reflecting differences in the legal definitions, the most readily available economic base, the demand for funds, and the most feasible tax rate. Because these variables differ in various areas, an assumed uniformity does not hold up. Assessment practices vary from one district to another. The universality of the tax is also thwarted by numerous legal exemptions approved in some countries.

In theory, because the property tax is impersonal, the rate structure is supposed to be fairly rigid and the revenue yield, inflexible. But, in practice, the rate structure and revenue have been flexible. In many developing countries rates are, in fact, adjusted to relieve taxpayers from hardship situations. Differential rates are also designated for specific purposes. For example, lower rates may be applied to high rise buildings to encourage this type of construction in land-scarce areas.

Impact, Incidence, and Neutrality of the Property Tax

The overall impact, incidence, and neutrality effects of the property tax are less discernible than those of any other major tax. These effects are hard to predict accurately because the property tax differs in various locales.

Impact

When property has not been bought or sold during a particular period, the owner must incur in full any newly levied tax during that period. If transactions do take place, shifting may occur. Its extent and direction depends on the type of property, its relative availability, and how the demand for housing changes as the price of housing changes. With property, shifting is usually forward in the form of higher prices to consumers.

If the property taxed is land sites, the owners theoretically incur the levy. Shifting generally occurs when the supply of a tax's asset is reduced. In this case, the supply of land is not reduced; therefore, the tax cannot be shifted forward to other users. Prospective buyers of such sites faced with this higher annual tax burden will thus reduce their bids; a property tax on land generally causes lower land prices.

Owner-occupants of housing cannot shift the tax. A home is a consumer good whose taxation is hard to shift because it is for use and not for sale. Only a tax that is high enough to force an owner to move could be shifted, but then only in part. The owners would incur at least part of the tax because the house's market value would be reduced.

Property taxes on improvements and on tangible personal property used in business are usually assumed to be shifted forward to the products' consumers or with rental housing, to the occupants. Theoretically, rent control relieves the tenant of some of the shifting of the tax because government puts a ceiling on rents. In practice, tax clauses are often written into leases that allow the continuance of tax shifting.

A general property tax on business capital could conceivably be shifted backward to the owners of capital, causing lower rates of return on the entire stock. This assumes the supply of savings is not responsive to interest rate changes—a phenomenon not universally supported in practice. Most business property taxes are probably shifted forward, and much of the remaining portion can be shifted backward to the owners of the capital as reduced asset values.

When a tax shifts within a sector, the division of the tax between landowning and tenant groups becomes significant. In a country where land or housing is relatively plentiful, landlords competing for tenants tend to absorb the tax. In countries that are land or housing poor, the tax is shifted onto tenants unless they are protected by governmental regulation.

Incidence

Most studies concur that the property tax is regressive. This is due to the fact that the tax is largely a consumption tax, and a tax on consumption is usually regressive through much of the income range. There are two common explanations for this overall regressivity, particularly for residential property. The first results from inconsistent assessment procedures. Assessors usually value lower-priced property at higher percentages of full market value and higher-priced property at lower figures. Presumably, this comes from the inability of local assessors to accurately evaluate expensive, complex property that typically shows inadequate market evidence. It is much simpler to accurately assess the more numerous inexpensive properties that are frequently sold and, thus, show good market evidence. As far as uniform rates apply to all types of property, the result is marked regressivity.

A second and more adequate explanation is the fact that poor families spend a much larger percentage of their total purchasing power for housing than do richer families. Expenditures on housing thus exhibit a relatively low degree of income elasticity. As far as this is true, the tax on residential property again exhibits substantial regressive tendencies. Much non-residential property also exhibits regressive effects from the property tax. The forward shifting of a substantial part of business property taxes causes such levies to be in part equivalent to a regressive general consumption tax. When combined, residential and non-residential property taxes are markedly regressive in the middle range of the income distribution.

Another regressive effect of the property tax comes from double taxation. Because a distinction between rights and claims on property and the actual physical thing itself must be made, some economists consider the property tax to be a tax not on personal wealth, but rather an erroneous double taxation on gross assets. Clearly, to tax a property's value plus its mortgage (which is intangible property) is taxing a significant proportion of the total valuation twice.

The property tax has little relationship to ability to pay. It may be true that, over time, asset values do tend to reflect capitalized income, but income flows do not necessarily coincide with the particular taxpayer's asset values at a given time. Discrepancies normally occur between the time of income receipt and the time of tax payment.

The property tax also has been criticized because the tax is not always related to the income derived from property. When land is being transferred from idle to productive use, or when rural land becomes urbanized, tax rates may rise quite prematurely to the actual realization of income from the land because of the increased potential value of the land.

Neutrality

Property taxes are not neutral. The property tax affects work incentives, saving, investment, consumption, and production inputs. Therefore, patterns of resource distribution develop that differ from those where there is no property tax.

Particularly in developed countries, much of property tax revenues is devoted to education. The probable effect of the property tax is to shift resources from private improvement of land to public education. Some observers believe that although the substantial nature of the shift causes discriminatory effects in other sectors, the shift is still beneficial. Given the high social rate of return on investment in education, the extensive development of public education programs has been important for national economic growth in many countries, particularly, low-income countries. Further, the unquantifiable returns of education to the individual may make investment in human development more advantageous relative to other forms of investment.

The property tax does not seem to have such favorable effects on other sectors. In the private production processes, it encourages substitution of alternative inputs for real property. To the extent that industries are limited in their capacity or opportunities to substitute factors of production within a reasonably flexible cost constraint, the tax is discriminatory by diverting resources away from those industries with relatively rigid productive processes.

The tax may also discriminate against housing by discouraging its consumption. The average rate of excise tax on housing is much higher than that on most other uses of the consumer dollar. In suburban areas, the tax is disproportionately higher, but the consumption deterrent may be small because the tax is directly tied to school and other public expenditure benefits realized by the home-owner. This direct relation is much more tenuous in larger cities. In some countries, housing expenditures are also largely exempted from personal income tax, which also helps offset the discouraging nature of the tax on investment in housing. Because some countries make interest expenditures deductible and do not tax imputed rent, investment in owner-occupied housing, in spite of the general tax, is encouraged.

The non-neutrality of the tax is obviously objectionable to those who do not see its direct public benefit. But this objectionable nature may stem largely from the traditional perspective of viewing the tax strictly as a cost. This may be because some of its benefits are not readily apparent to non-residential property owners. The non-neutrality of the tax is mitigated if it is seen as a charge for the use of certain types of public facilities, or as a charge for the consumption of specific public services that the taxpayer would purchase privately, if they were not provided publicly.

In summary, there is less agreement on the economic effects of property taxation, theoretically or empirically, than on its incidence and shiftability. Like other taxes, the economic effects largely depend on the scope of coverage of the levy on all real assets. Property taxation in most countries does not apply to all real assets. There is much differential treatment. Therefore, understanding the tax's precise effects is an empirical problem.

Some Practical Problems of Implementation

When planners decide to implement a tax and determine its exact form, they must often rely on fiscal and administrative expediency, as well as on theoretical information. For example, in deciding which concept to use for valuation—annual rental value (ARV) or capital value (CV)—practical advantages and disadvantages of each method should be compared. The ARV base seems to be more equitable. It does not tax expected earnings, nor does it impose hardships due to taxes out of proportion to current income. It also avoids injustices because of differential capitalized rates.

But there are some disadvantages. Every addition to property theoretically causes additional rate liability. Thus, the tax inhibits the developing and improving of existing housing, something obviously undesirable in developing countries. Second, the ARV base works effectively only where there is no rent control. With rent control, housing prices are frozen relative to other prices. Tax revenue cannot keep up with growing government needs, particularly during inflationary periods. Another loss of potential revenue because of using the ARV base occurs in rapidly developing cities, where people often buy land to build in the future. The true value may far exceed the capitalized value of the present land's rent. The true value may thus continue to rise, though rent is fixed. This inability of the ARV base to utilize rising property values may cause a substantial revenue loss to a government.

Some of the problems of the ARV base are met more satisfactorily by the CV concept. When the CV base is used, idle land with considerable market value is taxed. Ownership of idle land may sometimes better indicate taxable capacity, even though the land does not currently produce income. When all land is taxed under the CV base, this encourages more optimal use of the land than the ARV base does. But this may tend to hurry socially marginal development of land because of the cost of holding undeveloped property. Despite such problems, most planners appear to favor the CV base in developing countries, even where renting predominates.

If the CV base becomes the property tax, there is still the option of taxing the land's improved or unimproved value. Taxing the unimproved land encourages development—holding land off the market for a better price becomes unprofitable. Again, this may cause indiscriminate building. Investment in buildings is safe in inflationary periods, but this obviously increases inflation. Further, if the supply of building, labor and materials is inelastic, increased building must be supplemented by imports which, in turn, increase balance of payment problems. Building owners receive free urban social services when these services are paid for by the general taxpayer—who may not benefit necessarily from new buildings. These problems of social costs, however, can be met by governmental controls, such as interest rates on capital loans or special charges for municipal services.

Taxing the land's improved value fosters under-utilization and unfairly favors large landowners who can withhold land from use. There is a middle ground. There can be a partial rate for buildings that are taxed relative to a city's development and the expanding need for revenue. This method has the advantage of encouraging development and acquisition of sufficient resources to provide municipal services for this development.

In addition to problems of misunderstanding and consequent inappropriate use of property valuation methods, there are problems of administration. Generally in developing countries, property taxes have been applied mostly in rural areas. This is a major cause of the property tax's ineffectiveness. Applying the tax in urban areas greatly facilitates its administration there, rather than in rural areas. In cities and towns, land is seldom owned in common and it is easier to identify tax liability. Generally, urban areas are richer than rural ones and can absorb higher administrative costs and still make collection of the tax worthwhile.

Many countries do not realize how much revenue is lost because of a poor administrative organization. Adequate administration of land taxes first needs an efficient system of land administration. Good records of the registration of property rights, goods supervision of land tenure systems, and updated inventories of land resources are needed.

Adequate personnel trained in assessment procedures are needed to properly administer taxes. Heavy investment in this administrative cost will prove worthwhile in long run revenues realized by the tax.

Equitable assessment is crucial to an effective property tax. The tax will be poorly administered if there is legal vagueness in the evaluation method, if properties are not re-valued often enough, or if either intended or unintended inequities result from calculation procedures. In some countries, discrepancies between calculations of national wealth and the property tax-base result from a deliberate under-assessing of most taxable property. This leads to differences in assessed percentages between various towns or cities, where some pay more for services than others. This "competitive under-evaluation" has been quite common in developing countries. Much more serious are inequalities between taxpayers in the same district. Residential property is often assessed at various percentages of full market value because of ignorance or favoritism.

Government bureaucracies plagued with inefficiency will have tax collecting problems because of two related factors: the quality of the administrative organization, and the society's attitude toward the tax. The related phenomena of evasion and compliance can serve as indices to both the above factors.

Evasion most frequently occurs through political influencing of assessors and tax collectors, by general non-compliance, or through underpayment. When people will not pay their tax, administrative costs of collection become prohibitive. But when compliance costs for the government are held to a minimum—by extensive records required of the payer—government costs of collection are reduced. Placing the burden on the assessors, instead of relying on the stated returns of the taxpayers, probably increases administrative costs and may not necessarily increase compliance.

A country's property tax is dependent upon its administration. The number of taxpayers affected by the tax is partly determined by the tax's purpose, but also partly by administrative feasibility. Some administrative problems can also determine the adjustment of the tax-base and its calculation. This affects the impact, incidence, and neutrality of the tax. Much may be said for the administration of a simple tax, but the country's long-run interests must be considered.

The foregoing discussion of the practicality of using different types of property valuation and the difficulties of administration are clear indication that no one form of property taxation fits all countries or all localities within a country. It seems best for countries and localities to choose the most appropriate form of property taxation, based on their specific circumstances and needs. The ultimate decision about the utility of a property tax depends on its function within a country's overall tax policy.

Sales Taxes

Sales taxes vary widely and have differing effects on economies. These various taxes are called sales taxes because of common specific characteristics and economic consequences.

Sales taxes may be general—imposed on the sale of all goods and services except those specifically exempt—or they may be special—applied only to certain commodities or services. Both forms may be levied at the production, wholesale, or the retail level.

The base of such a tax is the amount of commodities sold (or bought), measured either in physical units or monetary value.

In theory, sales taxes are proportional—the tax rate is constant regardless of the amount of the base. In practice, they are regressive; the poor usually pay a larger proportion of their income in sales taxes than do the rich.

Such taxes effectively raise revenue with a fairly stable yield, that is, a yield subject to less fluctuations of the business cycle than income or property taxes.

After the implementation of a sale, taxes go to the government immediately. There is little of the lag in the receipt of funds that exists in other forms of taxation, such as the property tax.

Sales taxes are "socially expedient." Relatively large amounts are paid with little expressed dissatisfaction by people because they pay it in small amounts.

Sales taxes are shifted forward so much they are also called "consumption taxes"—because the consumer ends up paying. If the demand for a product is broad and, generally, steady regardless of price increases, the tax will be shifted onto the consumer. There are two main exceptions to the forward shifting effect of sales taxes. If the demand for a product changes appreciably as prices change, the supplier may absorb the cost of the tax to avoid losing customers through increased prices caused by the sales tax. Also, if a supplier's establishment borders an area not under the jurisdiction of a tax, he may absorb the cost of the tax to maintain competitive prices with the same commodities sold in an area across the border.

Retailers, wholesalers, or manufacturers assess and collect sales taxes and the government collects the revenue from them. The various kinds of sales taxes make either the collector's or the government's administrative responsibilities more or less difficult and cumbersome.

The above characteristics apply to all sales taxes. There are specific taxes whose differences in structure and application have various consequences for the economies of developing countries. These taxes are described below.

The Turnover Tax Such a sales tax is imposed at all levels—on the producer of raw materials, the manufacturer, the wholesaler, the retailer, and the consumer. Usually the rates of a turnover tax vary. Sales made by wholesalers are subject to one rate; sales by retailers, to another. The rates are usually proportionate to the markup of a product at all stages of production. Rates at the wholesale level are lower than at the retail level. The tax accumulates through production and distribution channels, and the final purchaser pays the total tax.

The turnover tax has some obvious problems. First, the increased price the consumer pays exceeds the total amount of taxes paid at various levels. Each dealer not only passes on all preceding taxes, but also determines his markup based on his total cost, which includes such taxes. Second, a turnover tax favors vertically integrated production. Such a pattern has fewer stages in the production chain that are subject to taxation. To favor large, vertically organized firms puts an inequitable burden on those firms which do not choose to pay or cannot avoid the tax. It may even force small, non-vertically integrated firms out of business. Encouraging vertical integration may be economically unwise if it tends to lead more slowly to economic growth than other patterns of production. In developing countries, where many firms are small, a turnover tax appears to have more harmful effects than beneficial ones.

The Single-Stage Tax at Pre-Retail Levels This tax is imposed only once in the production-distribution chain, either when the manufacturer sells the goods or at the first or last wholesale transaction. The tax can also be collected at point of importation because most taxable goods in developing countries are imported in finished form. Imposition of this tax at either the manufacture or the wholesale stages of the marketing chain avoids the substantial economic distortions of the turnover tax and concentrates collection on a small number of wholesalers. This is a particularly advantageous form of sales tax when much retailing is done by peddlers or at market stalls. These retailers are not burdened with either tax collection from consumers or tax payments to the government.

There are difficulties with both the manufacture and wholesale forms of this single stage tax. Both result in a non-uniform ratio of total tax to cost of production. Both have a similar cumulative effect, although not as severe as that of the turnover tax.

A specific disadvantage of the manufacture form of a sales tax is its tendency to shift manufacturers into distribution, thus reducing the tax-base. This forward integration of firms is inefficient. It encourages "house" brands of goods. The product can be bought from a manufacturer cheaply, and distribution and advertising costs will not be taxed. As in vertical integration problems of the turnover tax, firms that do not modify their distribution methods carry the burden of this tax, while those that do adjust avoid the tax.

A similar disadvantage occurs in the wholesale tax. This favors the retailer who integrates backwards. By doing his own manufacturing and wholesaling, he avoids the tax.

The Retail Sales Tax The retailer collects this tax from his customers; the government collects it from him. One advantage is that the retailer avoids all the problems of the pre-retail sales tax. There is complete forward shifting of the tax, with the consumer burden remaining uniform. The tax is introduced at the end of the production-distribution chain, so it does not accumulate. The retail sales tax also leaves production and distribution methods unaffected—they are not taxed. Because the tax is separable from a commodity's price, wage increases due to price inflation are lessened. The price increase is seen only as a specific payment to the government.

Also, the number of taxpayers the government deals with is much larger than the number of taxpayers at the pre-retail level. Related to this disadvantage is a potentially severe administrative problem in developing countries. Where most retailers are small owners or peddlers, bookkeeping is often impossible—due to lack of personnel or to lack of sufficient education. Family businesses often do not keep separate accounts for business and family finances. If retail sales taxes have different rates for different goods, the small retailer must differentiate these rates, complicating his already burdensome bookkeeping.

One way to solve these administration problems in developing countries would be exempting the smaller retailer, taxing only the larger operations. The cut-off line would by necessity be arbitrary. Further, the revenue lost by exempting what might be a large number of retailers could be significant in developing countries. This selective application might also cause larger retail firms to subdivide to avoid taxation.

The Value-Added Tax (VAT) A multi-level application of a tax, the VAT is a flat percentage levy paid on the value added to a product or a service at each stage of production and distribution. It is applied (and itemized on the invoice) at each point of sale (except final sale), where the value has increased. Each processor collects a tax on his total sales. He is credited for all taxes paid on purchases from other VAT-paying firms. The difference between these two figures is paid to the government, as his value-added tax.

For example, production of a bolt of cloth involves a spinner, a dyer, a weaver, and a retailer. If a VAT of ten per cent is imposed, the distribution is as follows: If the spinner charges ten cents for his goods, he is taxed one cent on his value added to the raw materials, so he charges the dyer 11 cents. The dyer adds ten cents of value to the item. His total cost is 21 cents (11 paid to the spinner, plus one cent tax for his ten cents value added); so he charges the weaver 22 cents. The dyer is credited one cent for the VAT paid on the spun yarn, so he pays only one cent—for his value added. The weaver charges 33 cents for his bolt of cloth; he is credited for two cents of VAT and pays one cent to the government. The retailer charges the customer 44 cents and is credited for three cents, paying the government one cent. The amount paid in VAT is four cents, but it is collected in less visible installments than a retail sales tax. The VAT is passed on in the production-distribution process until the consumer who buys the finished goods pays all of it. But this is not really apparent in the final price of 44 cents because the accumulated taxes are hidden within it.

All such taxes, either in use or being seriously considered, involve the tax deduction approach to calculating liability: each firm subtracts the tax it pays on purchases at the end of a set time period from its taxable sales. The total base of the tax is the same as a retail sales tax. The retail selling price equals the sum of values added at all steps in production and distribution. What is new about the VAT is that the impact of payment is spread through the economy.

With a VAT payable at all stages in the production and distribution of a good or service, the theoretical base of the tax is potentially as large as a country's gross national product. Because it has such a base, the VAT can raise large revenues through relatively low rates. The cost of providing benefits from government service is spread through both the entire decision process and the production- distribution- and consumption chain. This is a principle of taxation that is new to many countries. Taxation is not typically viewed as a necessary cost of production "wherever production takes place and whatever is produced." Therefore, a discussion of the philosophy behind value-added taxation is important to evaluate its merits.

Types of VAT

In a simple, closed economy with two productive factors (labor and capital), there are three major types of VAT:

A "gross product" VAT, without allowances for capital purchases or depreciation. This is equivalent to a uniform general sales tax on all final goods and services (GNP). Any additions to inventory are counted as a positive final good.

An "income" VAT, where depreciation is deducted from the tax-base. This is equivalent to a proportional tax on total factor income, minus depreciation. Any deletions from inventory stocks are counted as a negative final good.

A "consumption" VAT, that allows immediate deduction of all amounts of VAT that a firm has paid on purchased supplies. This is equivalent to a general tax on final consumption goods only.

The most popular VAT is the third. All West European users set its base equivalent to familiar sales taxes on manufacture, wholesale, and retail levels. The most common base used is the retail. For this reason, when the VAT is referred to as a basically retail sales tax, this means it is of "consumption" variety. This does not represent a tax at every stage of production, but it may be applied to all stages.

Strengths and Weaknesses of the VAT

These involve seven basic issues to be discussed here: neutrality, revenue raising power, inflation, equity, Central Government power, administrative facility, and feasibility.

—Neutrality of the VAT

The most basic claim for this tax is that it distorts economic decision-making the least. It is therefore considered as an alternative to those forms of taxes that do cause distortions in investment decisions, pricing policies, and competitive positions. Its neutrality—in not favoring one factor, good or service over another—is the VAT's strong point.

Under a VAT system (of the consumption type), an industry's tax liability is unaffected by the production process. No penalties or rewards for using one type of factor over another occur. A VAT does not encourage "cost padding" or discourage cost reductions—a firm's VAT liability is determined entirely by factors external to production-method decisions. Every dollar gained from internal cost reduction is reflected in a firm's after-tax profits, which should encourage improvements for efficiency. Also, the tax is neutral towards the choice of debt or equity financing.

But its neutrality has been challenged. As used in Europe (often cited as a model for other countries), the tax is not neutral. It favors capital-intensive processes by exempting capital goods. But deducting depreciation is a disadvantage in developing countries where industry is mostly labor-intensive, directly increasing the cost of employment. To avoid a comparatively higher tax burden, such firms may discourage employment or may lower wages—steps obviously harmful to a developing country's economy.

As a replacement for corporate income taxes, the VAT may produce greater revenue stability. But because corporate profits reflect fluctuations in economic activity, a high tax rate makes an intensive application of this tax-base a major factor in fiscal instability. Revenue from the VAT system fluctuates less than present corporate taxing schemes and, in most developing countries, it may contribute to fostering stabilization in fiscal revenues.

The VAT may also stabilize consumption expenditures more than the personal income tax. Consumption expenditures can be specifically reduced by a smaller increase of the VAT rates than by personal income tax rates. Such a broad-based tax as the VAT seems to regulate demand more effectively than the more narrow-based excise taxes. But this does not necessarily prove to be true. Direct taxes are better manipulated for demand management purposes and probably have less effect on the cost of living than indirect taxes, such as the VAT. When indirect taxes are raised to offset a budget deficit, prices go up—which eventually causes labor to increase wage demands.

If we define neutrality as the lack of any distortion towards private economic activity, it is obviously quite difficult to demonstrate the neutrality of the VAT (or any other type of tax). Perhaps all that can be said about the neutrality of a VAT is that its primary effects appear to be less distorting than a corporate income tax, but that its secondary effects are difficult to ascertain.

—Revenue Raising Power

The VAT is claimed to have great revenue raising power. It imposes relatively low rates over the entire economic process instead of concentrating on specified groups. For countries that are members of a common market, the economic base becomes even broader. The yield of the sales tax on each commodity is automatically distributed, based on the value added in each country (when no rebate on exports within the common market exists). Much of the VAT benefits occur in the international sector because the tax can put foreign produced goods on the same tax-base as those produced domestically.

In developing countries, leakages reduce the revenue collected and, consequently, limit the effectiveness of the VAT. Because in most VAT plans farmers or artisans are not taxed, loss of VAT revenue occurs when a product goes directly from artisan to small retailer. This loss of revenue can be substantial when too many members of the economic process are exempted from the tax. Even worse, the tax may be shifted onto taxed products using materials produced by exempted firms. There are also problems with service industries. If they are exempted, the VAT base is narrowed and becomes less effective. If they are not exempted, multiple application of the tax may cause economic distortions. Only those services used in the production process should be taxed.

—The VAT and Inflation

The VAT opponents also argue that any of its power to raise revenue is lost through its inflationary tendencies. In countries with inflation, they say, the VAT causes prices to rise—probably higher than the tax. Few dispute this fact. A general tax with a base dependent on transactions is demonstrably shifted forward in higher prices. A selective tax is assumed to cause prices of untaxed products to fall, while those of taxed ones to rise. The extent of a selective tax, therefore, determines whether the general price level will rise or remain about constant.

In an attempt to counter this assertion that prices inevitably rise with such a tax, idealistic proponents point out that if a VAT replaces existing taxes—such as the income tax—corporate prices may decline. They claim, perhaps rightly, that a VAT's impact on prices will strictly be a function of the taxes it replaces.

But the main reason for considering the VAT in some countries is the additional revenue needed, particularly to aid public education through the Central Government. It is not meant to revamp existing tax plans. Given this need, it is most unlikely that the VAT will replace any existing tax method, at least initially. But, because a price rise results from the introduction of a new tax, VAT proponents do not have a strong argument.

Yet within presumed price increases, consumers, at least under present circumstances, could probably not distinguish between the portion of an increase caused by the tax and the portion due to general inflationary pressures. The concealment of a VAT in retail purchases may be the saving characteristic. But, besides the basic rise in prices caused by the tax, a secondary price rise may occur when labor attempts to recoup its loss in real income by demanding wage increases. Any relief to special groups, such as property owners, might thus be lost in a new round of inflation.

—Equity of the VAT

The VAT is most frequently criticized as being only a national retail sales tax which, because it is regressive, would hurt the poor most. Those who do not deny its regressivity point out the advantages in hurting the affluent less because these classes save, invest, and innovate. This non-egalitarian approach is usually tempered by the assertion that the tax's regressive force would be mitigated by rebates to lower income households. The VAT is undoubtedly unsuited for income redistribution and this goal must be left to other taxes and government policies. The VAT does not attempt to create any particular patterns of income distribution. The present controversy involves only a reasonable equitability in the tax. It is generally agreed that VAT's do generate extensive revenue.

—Political Effects of the VAT

As presently conceived, the VAT is imposed by the Central Government, and its revenue accrues to the Central Government. In developing countries, whose educational expenditures are centrally controlled, this tax does not change government power relationships and it increases resources for educational needs. It probably strengthens government control over educational expenditure needs. But where education has been a local responsibility, this tax may disturb the power relationships among levels of government. The fear of usurping local autonomy is often greater than the incessant cry for relief of local fiscal distresses.

—Administrative Facility of the VAT

The VAT has two related administrative advantages: a built-in pressure for compliance; and a related defense against pressures for exemption status.

Collecting a substantial proportion of a selling price through a single stage tax, such as a general retail sales tax, creates evasion problems which the VAT avoids. A seller's failure to pay the VAT increases the VAT liability of the purchaser of a good or service. Purchasers, thus, have a strong vested interest to insist that sellers record their VAT amounts in full. This is true simply because, according to laws in effect in Western Europe, only the VAT amounts written on sales invoices from purchases are deductible from the VAT liabilites arising from sales. Fraud is possible, but is probably less likely with the VAT than with many other major taxes. When tax paid by one firm is reported as a deduction by the firm that buys from them, cross-auditing can easily disclose evasion. In addition, evasion is minimized because a large portion of the tax is collected prior to the retail stage. If retailers evade, taxes will be lost only for this level.

The VAT has an administrative advantage in developing countries. Such taxes have received far greater compliance than direct taxes for general purposes in countries where taxpayers are not confident of the government's stability.

European legislation also indicates that the VAT has an inherent defense against demands for special treatment. Firms in a non-VAT-taxed industry would not receive refunds of the VAT amounts included in their purchases. Firms taxed according to the VAT would receive no credit on their VAT liability when purchasing from non-VAT-paying suppliers. These two elements have caused the VAT base to expand, not contract—a highly desirable phenomenon because a broad base requires lower rates to raise a specified amount of revenue than does a narrower one.

The VAT has also some administrative disadvantages. Evasion is minimized but is by no means eliminated. The VAT is inherently harder to administer by both the collector and the assessed. The collector (the Central Government) must deal with many more firms than it would for a single-stage tax. This necessitates developing and administering competent bureaus to enforce and tabulate the tax.

The VAT requires of the small firm and street vendor in developing nations more extensive bookkeeping than before—if they have kept any records at all. There is also the problem of literacy. The small firm owners or street vendors must understand the workings of the tax (at least at its most simplified level) and must be able to do the necessary paper work. It is, therefore, proposed that vendors and firms with small monthly sales and inadequate education be exempt because poor record-keeping would render effective control impossible. But there are problems here. The dividing line between those firms that must register and those that do not is arbitrary, even with careful study. Firms must also be prevented from subdividing to escape taxation. In addition, sale of goods to street vendors may be considered retail, rather than wholesale, and revenue will be lost in these transactions. Loss of tax on the street vendor's marginal increase of value on his sales can be justified as social equity.

—Feasibility of the VAT for Developing Countries

A VAT system undoubtedly has advantages for both developed and less developed nations. At the present time, the most attractive one is its enormous potential for raising revenue. But much of its merit depends on its ability to minimize inefficiencies and distortions in economic decision-making, and on its ability to tax a country's broad economic base.

Evidence of these effects, particularly for developing countries, is not definitive. Most developing countries tend to be labor-intensive, and the VAT tends to favor the introduction of capital-intensive methods. The exclusion of farmers and artisans can narrow the tax-base beyond effectiveness. Administrative problems for the small firm and street vendor make the application of the tax difficult. The theoretical merit of the tax has many practical drawbacks.

These advantages of the VAT that seem soundly substantiated are mostly political. Much of the support for the tax may largely be due to the fact that it simply possesses a new name and is, thus, politically more acceptable than a modification of an established plan. Thus, the controversy seems restricted to discussions of giving a Central Government an additional revenue source, regardless of its merits judged by traditional standards of equity and efficiency. Perhaps, the VAT is a tax that is the "lesser" of many evils.

SUMMARY

Property and sales taxes are major government sources of revenue for education. These taxes should be evaluated for their adequacy, stability, growth-potential, administrative ease, impact, incidence, and neutrality.

Both property and sales taxes have the capacity to provide adequate revenue for an educational system, if the tax rates are sufficiently high. Property taxes tend to respond to fluctuations of the business cycle more than sales taxes, but both can provide a fairly stable yield. Growth of revenue depends more on the growth of the tax-base than on the tax rate, but both tax-bases are directly related to income.

The impacts of both property and sales taxes are most often shifted forward to the consumer. But in the case of property taxation, rent control can lessen this shift. The retail sales tax is seldom shifted backward to the manufacturer. The VAT has an important advantage over other sales taxes by making each member of the production-consumption chain share the impact of the tax.

In theory, the incidence of these taxes is proportional. But, in practice, they are all regressive. The poorer consumer and the smaller producer carry a greater burden of these taxes.

Property and sales taxes are not neutral. Property taxes particularly discourage the construction and improvement of housing. Both the turnover tax and the single-stage pre-retail tax encourage modifications of a country's production patterns. Retail sales taxes and the VAT appear to be the least distorting.

From an administrative viewpoint, property taxes require fairly elaborate administration; avoidance is fairly difficult; and administration appears easier in urban areas than in rural ones. Avoidance of sales taxes, except the VAT, is fairly easy. With the VAT, cross-checking is easy, and tax avoidance more difficult. The bookkeeping of the VAT, however, becomes more complex than that of other sales taxes and is a serious drawback for developing countries.

No tax is perfect and no tax alone meets all the needs of a country. Careful consideration should be given to the effects of a particular tax, evaluated according to the criteria discussed above.

CHAPTER IV

Elementary and Secondary Education: Public and Private Funding

METHODS of public financing of education sometimes vary with the government structure of the country. Highly centralized governments tend to use full central funding. Regional and local funding is more common in government systems where states and localities have the power to impose taxes.

This chapter describes the different modes of public financing of education and the vehicles for distributing funds.

When regions and localities partially finance their educational systems, the capability of raising resources varies according to the local tax-base. Inequities of tax burdens are unavoidable if a satisfactory level of expenditures for education is to be provided. Central Authorities can mitigate these inequities in the tax burden by distributing funds in ways that equalize these burdens as much as possible.

This chapter describes and analyzes different methods for distributing funds from the viewpoint of equity of the tax burden. Most of these methods are being used only in the United States, but the basic concepts are transferable to other countries with federal systems of government.

Selected representative examples from developing countries are presented to give a current overview of the following: public financing of elementary and secondary education in developing countries, methods of distribution of funds, and types of aid from Central Government to regional and local governments.

In addition to government funding, there has always been private funding of education. This chapter also discusses private funding by families, business corporations, voluntary agencies, and collectives.

PUBLIC FUNDING

An educational system can be fully supported by a single level of government—central, regional, or local—or by a combination of these levels.

Full Central Funding A highly centralized government may use full central funding to maintain considerable control, both legal and financial. Such a government can also use full central funding and yet not impinge upon regional autonomy. Central Authorities allocate funds to regions for spending as the regions decide. The Central Authorities generate all educational revenues but exercise control only in determining the total regional educational budget.

Recently in some Latin American countries, full central funding has strengthened national unity without creating a highly centralized system, by subdividing the country into regional educational authorities which have no relation to the country's political subdivisions. Regional educational authorities can thus attack their own particular problems—literacy, tribal, or linguistic—that affect education, without being hampered by political constraints.

Full Regional Funding Regional authorities may themselves generate all educational revenues. Like Central Authorities, they can either control all actual expenditures, share them with local authorities, or simply determine the local educational budgets and allow local authorities complete autonomy in spending.

Potentially, full central or regional funding can make a more equitable distribution of educational resources than full local funding. The local educational budget would not depend on local fiscal capacity or wealth, but rather on the fiscal or tax-base of the entire country or region. However, there is the danger that when the Central or regional authorities tightly control all spending, bureaucratic delay and confusion, as well as unresponsiveness to specific local needs, may become prevalent.

A political commitment to full central and/or regional funding may also cause financial constraints when there is general educational expansion. This creates pressures to curtail expansion and reduces quality by spreading resources too thin. For this reason, advantages and disadvantages of additional funding from local and private sources should be carefully considered.

Full Local Funding This is possible when local authorities have wide taxing authority and a sufficient fiscal base to fund local educational needs —generally unlikely in developing countries. Potentially, full local funding could satisfy specific local needs, but it may lack economies of scale for supportive programs, such as curriculum development.

Local fiscal capacity, even in wealthy countries, usually varies considerably from one area to another. Rich areas inevitably have excellent schools and poor ones may not even have minimally adequate ones. Where full local funding poses inequities, the possibility of some partial local funding should be considered, supplemented by government funds.

Combinations of Central, Regional, and Local Funding Possible combinations of public funding of education include: central and regional; central and local; regional and local; or a mixture of the three. In a combined funding plan, each government level might fund certain segments of the educational system. Central sources might fund capital costs; and lower level sources, recurrent costs. Alternatively, educational revenue generated at two or three levels might go into a general fund for redistribution to educational spending units by either Central or regional authorities.

Vehicles for the Distribution of Public Funds

There are three major vehicles of distributing public funds: general grants, categorical grants, and aid in the form of goods and services.

General Grants Such grants made from a tax collecting authority to a spending authority may be used for any educational purpose. They may be expected to cover all recurrent expenses of educational institutions, or to supplement local funds from various public and private sources.

Categorical Grants These may be spent only for some specific educational purpose—experimental programs, special subjects, teachers' salaries, materials, maintenance, transportation, etc. Categorical grants may also offer special aid to selected types of schools, such as vocational, normal, or rural boarding schools. Selected local areas with problems specifically related to education, such as high concentrations of poverty or sparse or nomadic populations, may receive such grants to solve their problems. When categorical grants are given to selected types of institutions, or to local educational authorities in particular areas, the distinction between general and categorical grants blurs. These types of grants may be tied to special programs or purposes, or may be awarded as general aid. Categorical grants generally introduce rigidity and bias into decision-making because they channel expenditures to specific categories. But they do provide a degree of control for higher authorities that may be necessary when decision-making at the regional or local level has been highly inefficient.

Many developing countries use categorical grants extensively. But local bottlenecks and inefficiencies of a system of tight categorical grants have caused educational planners and economists to dislike them and to favor general grants. Financial authorities who wish to control aspects of educational programs' actual provision are urged to use administrative and/or legal regulations, rather than the rigid financial regulations of a complex structure of categorical grants. Financial authorities need not abandon categorical grants altogether. But the advantages and disadvantages of categorical grants for a particular country should be examined, and the replacement of some or most of them by general grants should be strongly considered.

Aid in Kind This type of aid refers to providing staff, special services, or materials to local schools or their administrations. Aid in kind includes: the central provision and financing of health personnel, supplies to local schools, provision of special kinds of teachers—such as agricultural specialists—and textbooks or library facilities.

Equity in the Distribution of Funds from Central to Lower Level Governmental Units

A country with a federal system of government has substantial tax revenues generated not only by the Central Government but also by regions and/or localities. Educational revenues may be generated by more than one governmental level. Generally, each level is authorized to use different tax-bases for revenue, although two levels might use the same base, such as income. Various tax-bases of the Central Government cover the entire country. A regional or local government can only derive revenue from those tax-bases authorized in its own area. Sometimes these tax-bases can only be taxed at a minimum rate, thus limiting regional or local fiscal capacity.

In almost all countries, the value of regional and local tax-bases varies considerably from one area to the next. When local governments or school districts apply the same tax rate, those areas with a large tax-base will generate a much greater absolute amount of educational revenue than poor areas with a small tax-base. If regional or local taxing authorities must apply widely differing tax rates to their individual tax-bases to generate an equal amount of revenue, then the tax burdens in different areas will be grossly unequal.

A primary reliance on local taxation for school support always leads to wide disparities in local tax burdens, and also in the revenue per pupil that local authorities can generate. A greater equalization of the burden of support would result if the amount of revenue generated were a function of the total national income and wealth, that is, of the total tax-bases available in the entire country.

This does not mean that local or regional taxing authorities have no part in generating revenues. If the tax-bases available to local or regional authorities are such that regional variations in ability to pay or fiscal capacity become significant, the Central or state government authorities can guarantee each locality an equalized educational revenue per pupil. This should be based upon the Central Government's revenue per pupil that results from applying the same tax rates in each locality.

Central Government revenues can be distributed to local or regional government to guarantee some measure of equal ability to support education among all local educational authorities. The educational financing formulas developed and applied in the United States for allocating state aid to local school districts are based on the above criteria of equalizing tax burdens.

Existing Educational Finance Distribution Formulas from the Equity Viewpoint

The basic types of funding will be reviewed here: flat grants, matching grants, full central funding, and the following equalization plans: the foundation plan, the percentage-equalizing plan, the guaranteed tax-base plan, the power-equalizing plan, and the district-equalizing plan. These formulas refer to non-categorical distribution of funds. Categorical grants can also be distributed to produce more equity. Some formulas of this type are described in Section 7. Only equalization of fiscal burdens is considered here.

Flat Grants These are payments from Central or regional authorities to local school districts based on enrollments and/or the number of personnel employed. The criteria for determining the flat grant do not consider local ability to raise additional revenues for education.

Where local authorities can raise funds for education, the flat grant system does not reflect the criterion of equal-expenditure-per pupil. Local authorities in wealthy areas, with a large tax-base or where a high tax rate can be levied, can always raise considerable local revenue for education to supplement the flat grant from Central or regional authorities. Wealthy districts can therefore spend much more per pupil on school services than can poor districts with limited fiscal capacity.

If the flat grant does not cover what is considered a sound, minimal educational program, local authorities in very poor areas or districts cannot offer adequate educational services. Equalizing criteria will not even be approximately met.

Assume that local authorities can use only a poll tax for raising revenues to supplement the flat grant from the Central Authorities; that it costs $50 (or 50 of any other monetary unit) per pupil for a minimally sound education, and that the flat grant provides only $30 per pupil. Assume further that there are two districts, each with 10,000 persons paying the poll tax, and with 5,000 children in school. The poorest district may be a remote, rural area with an average income of $300 per year for those who pay the poll tax. Income in the richest district averages four times more, or $1200 a year per taxpayer. In the poor district, taxpayers pay only $5 a year poll tax; while in the richest district they pay $20 a year. The additional revenue that each local district can raise is as follows:

	tax-base: number of poll tax payers		tax rate per person		
		×		=	total local revenue
Richest District	10,000	×	$20	=	$200,000
Poorest District	10,000	×	$5	=	$50,000

Dividing total revenues by the total number of students (5,000 in each case) indicates that the richest district can raise $40 per pupil by local taxes; and the poorest district, only $10. When these amounts are added to the $30 per pupil flat grant, the richest district can spend $70 per pupil; the poorest, only $40. The richest district will, therefore, have a much higher quality educational system than that determined as minimally adequate—which is $50 per pupil. The poorest district will not even have the minimum.

Thus, a flat grant that does not cover the cost of minimum quality education per pupil can cause great disparities in expenditures per pupil. It also does not guarantee to the poorest localities minimally adequate educational revenues.

Matching Grants The Central Government matches locally raised funds in a given proportion. For every dollar raised in local taxes, the Central Government might contribute a dollar, or, say, two-thirds of a dollar. Such distribution of funds is inherently inequitable because the burden of raising tax dollars in a wealthy community is much smaller than in a poorer community.

Full Central Funding Like the flat grant, full central funding requires a payment from the Central or regional authorities to the local district based on some criterion, such as the number of pupils and/or teachers in the district. The full Central Government funding plan does *not* allow localities to spend any extra funds for education above the centrally determined amount. Because the Central Authorities fund all districts at the same rate, this formula produces a maximum equalization of expenditures. But expenditures per student need not be equal in all schools if categorical grants are awarded on a non-equal basis.

The size of central grants is unrelated to local fiscal capacity, but the equalization of tax burdens is generally realized because the Central Authorities raise revenues from various tax-bases throughout the entire country or region (state). This burden is distributed over the whole area covered by the higher taxing authority. The equity of the tax burden for financing education is directly related to the equity level of the total tax structure of the country.

Equalization Plans The next five patterns of educational financing all reflect, to some extent, the equalization-of-burdens criteria. They all consider variations in local taxpaying ability, or the fiscal capacity of local school authorities to raise local revenue. When equalizing formulas are used, wealthy localities receive less money from central or regional sources than poor ones.

A local district's fiscal capacity is indicated by the size or value of the tax-bases which it has the authority to tax. In the United States, the local tax-base is comprised mostly of the assessed value of property within the local school district. In developing countries, when the Central or state governments authorize local governments to raise local revenues, various kinds of tax bases may be available to local authorities. These include taxes on individuals, sales of particular products, movement of goods, and property. The value of the tax-base available to generate local revenues is called the fiscal capacity of the local unit. Almost any tax-base may be used in applying the various equalizing formulas discussed below.

Foundation Plan

Foundation plans are intended to make all local school districts equally able to support the minimally acceptable level of per-pupil expenditure specified by the Central, regional, or state government authorities.

The Central Authorities determine the minimum rate at which local authorities must tax whatever tax-bases are legally available. This particular designated tax rate is called the minimum allowable local tax effort. Theoretically speaking, the minimum tax rate is established at the level required to raise foundation plan expenditures in the richest local authority of the state or region. When this minimum tax rate does not generate sufficient revenue to support the minimum level of expenditure per pupil guaranteed by the Central or regional authorities, the Central Authorities will pay the difference. This difference or balance is the amount of central or regional aid that must be granted to local districts. The following formula is used to calculate the central aid to be granted to any local district:

(A)		(B)		(C)
the amount of central aid to local district	=	number of pupils per district	×	minimum guaranteed amount of per pupil expenditure

minus

(D)		(E)
minimum local tax rate set by the Central Authorities	×	value of local tax-base of any district

Obviously, the number of pupils in school and the value of the local tax-base (i.e., the local fiscal capacity) may vary from district to district. The minimum guaranteed amount of per-pupil-expenditure and the minimum allowable local tax rate are the same for all districts. But this does not mean that a local district cannot actually levy a higher tax rate and possibly generate more revenues to spend per pupil than the minimum amount guaranteed by Central Authorities.

If a local district has a large tax-base and, if by applying the minimum tax rate, it generates more revenue per pupil than the foundation plan guarantees, that district will receive no central or state aid. In the case of wealthy districts, (D × E) in the formula above will exceed (B × C). The wealthy district can than either lower its tax rate (D), to raise only the revenue required per pupil (E), or it may apply the excess revenue to its educational system and thus raise its expenditures per pupil.

To illustrate how central aid to a poor local school district is calculated, assume: that the number of pupils in this district is 10,000 (B); that the Central or regional government determines the minimum acceptable expenditure for every pupil in the country or region to be $500 (C); that the minimum local tax rate is three per cent (D); and that the local authorities are required to use a retail sales tax to generate local revenue which yields a total sales tax-base of $100 million (E).

Central or regional aid to be granted to this district can be calculated, according to the foundation formula on p. 57 as follows:

(B)		(C)		(D)		(E)
10,000	×	$500	minus	.03%	×	$100,000,000

or

$5,000,000 minus $3,000,000

The total amount of central aid to be allocated to this district is, thus, $2,000,000.

The foundation plan is based on an equal guaranteed expenditure per pupil. This does not reflect the differing needs of educationally disadvantaged students or the varying costs of providing the same educational services in different areas. These factors could be determined in the foundation plan by calculating different educational needs and costs in terms of weighted-unit costs of pupils or teachers. To do this, the appropriate differential unit costs per category of pupil are calculated. Then a series of weights, say, one for normal students, 1.5 for minority or impoverished students, etc., would be assigned. The weighting factors are pre-determined by authorities at either the Central Government or the state level. Each local district would determine the number of students in each category and then multiply the number of students in each category by the appropriate weighting factor. In this way, a local district could total the calculation of its weighted pupils to clearly see, in effect, the total input actually required by part (B) of the formula.

How much equalization of educational opportunity is achieved by applying foundation formulas depends on how close the minimum amount of per-pupil expenditure guaranteed by the Central Authorities is to the amount spent by the wealthier districts. The higher the minimum expenditure guaranteed, the greater must be the total amount of central aid; conversely, the more the total amount of aid provided is limited by the Central Authorities, the less the equalization.

The more the Central Authorities permit individual districts to raise their local tax rates above the minimum rates designated in the foundation formula, the greater will be the disparities in actual educational revenues realized by different localities. Additional money raised outside the foundation plan may vary greatly between districts because such revenue is basically a function of local wealth.

The higher the tax rate designated in the foundation formula, the more equity will be achieved. Equalization will also be enhanced if the formula is augmented by minimum grants.

Percentage-Equalizing Plan

This plan calculates educational needs on a straight per pupil basis. Central or state aid to districts is computed by using a ratio of some measure of its wealth or fiscal capacity per pupil to a comparable measure of fiscal capacity for an average district in the country or state. When the percentage-equalizing formula is applied, central funds are allocated in inverse proportion to the local districts' taxpaying capacity, i.e., the poorer districts get higher allocations. This is basically the same result achieved by using the foundation formula.

The percentage-equalizing plan makes all localities equally able to support any level of expenditure per pupil which they find necessary. Local school districts decide the appropriate level of per-pupil expenditure instead of the Central Authorities. In theory, this implies that local districts are equally able to spend whatever amount they wish; but, in practice, the Central Authorities always place some upper limit on the aid granted. They do this by determining what percentage of the total costs of education in the country or state they will finance. The remainder must be financed by the various localities. If the Central Authorities decide to pay 50 per cent of the total educational expenditures in the state, the percentage-equalizing formula described below, as applied to districts of varying fiscal capacity, assures that the state will pay a very high percentage of total school expenditures in the poorest districts, and a very low percentage of total school expenditures in the richest ones. In the country or state, as a whole, the formula assures that the Central Authorities pay only 50 per cent of the total educational expenditures in the country or region.

The percentage-equalizing formula is calculated as follows:

$$\underset{\text{(A)}}{\text{central aid to a district}} = \left[\underset{\text{(B)}}{100\% \text{ minus}} \quad \underset{\text{(C)}}{\begin{array}{l}\text{percentage of total education}\\ \text{expenditures in country or region}\\ \text{which must be financed by}\\ \text{local authorities}\end{array}} \times \frac{\begin{array}{l}\text{(D)}\\ \text{value of the tax-base per pupil}\\ \text{in the particular district}\end{array}}{\begin{array}{l}\text{value of the tax-base for the}\\ \text{entire country per pupil in the country}\\ \text{(E)}\end{array}} \right]$$

$$\text{multiplied by} \quad \underset{\text{(F)}}{\begin{array}{l}\text{total educational expenditure in}\\ \text{the particular district:}\\ \text{number of pupils in the district}\\ \text{times the expenditure per pupil}\\ \text{which the district sets for itself}\end{array}}$$

In this general formula, (B) minus (C) represents the percentage of total educational expenditures in the country or state that the Central Authorities have determined to finance. Once this decision is made, the value of (C) can be considered fixed. For any particular district, ($C \times \frac{D}{E}$) represents the actual percentage of its own total educational expenditures that it must finance. If the district is richer than average, (D) will be greater than (E) and therefore ($C \times \frac{D}{E}$) will be larger than (C). The richer district will pay a higher percentage of its educational expenditures than the average district. Alternatively, if a district is poorer than average, i.e., if the value of its tax-base per pupil is lower than the state average per pupil, (D) will be less than (E), and ($C \times \frac{D}{E}$) will be less than average.

To illustrate how central aid to a district is calculated using the percentage-equalizing formula, assume that local school districts are authorized to use only a property tax to raise local revenue. Central Authorities decide to finance 50 per cent of total educational expenditures in the country, leaving 50 per cent as the average local share (C). The hypothetical district to which the formula is applied has 10,000 pupils and decides to spend an average of $500 per pupil, or $5,000,000 (F).

Because it is assumed here that local revenue can be raised only through property taxation, the value of the tax-base per pupil is the assessed valuation of property per pupil for the district as a whole. Assume this to be $15,000 (D). Next, calculate the assessed valuation of all property in the country (the value of the country's tax-base) and divide this by the total number of pupils in the country. This gives the average assessed valuation of property per pupil in the country (E). If the hypothetical district is assumed to be poorer than average, (E) might be $20,000. Thus, the values for the percentage-equalizing formula are as follows:

C, overall average local share of expenditures = 50%
D, assessed valuation per pupil within the district = $15,000
E, assessed valuation per pupil in the entire country = $20,000
F, total educational expenditures in the district = $5,000,000.

The formula, once again, for calculating central aid to any district is:

$$A = [B - C \times \frac{D}{E}] \times F$$

This hypothetical district has been assumed to have a lower than average assessed valuation per pupil. The actual share of its own expenditures (F), which this poorer district must pay ($C \times \frac{D}{E}$), should be less than the average local share of total educational expenditures in the state (C).

Applying the figures for our district, the formula above can now be expressed as:

$$A = [100\% - 50\% \times \frac{\$15{,}000}{\$20{,}000}] \times \$5{,}000{,}000$$

The district's actual share of total educational expenditures is 50 per cent times three-fourths or 37.5 per cent. This means that the Central Authorities will pay 62.5 per cent of this district's total budget as central aid, or $3,125,000.

If the district decides to raise its average expenditure from $500 to $600 per pupil, the Central Authorities will still pay 62.5 per cent of its increased budget; hence, the *amount* of state aid to any district which unilaterally raises its per-pupil expenditure will always increase.

In theory, the amount of aid to a rich district may even become negative—the rich district having to return money to the state. In the example above, if a district is more than twice as wealthy as the average district, the amount of state aid becomes negative, and the local district would then pay the state. In practice, this is not done, especially where the rich districts have strong political power.

In reality, the Central Authorities cannot fund any level of per-pupil expenditure that the various local authorities may wish to spend. If all districts try to raise per-pupil expenditures, the Central Authority will have to limit its total aid to all local districts. It could do this by raising the value of (C), the percentage of total educational expenditures in the country that must be financed through local taxation. This would necessitate re-calculating the percentage-equalizing formula for all districts, when total central funds actually allocated cannot cover the original calculations of the formula. This procedure is normally too time-consuming to enable local allocations to be re-calculated when payments are due. Usually, the Central Authorities simply cut back all local grants determined in the original calculations by an equal percentage.

In practice, if a poor district were originally entitled to $500 per pupil and a wealthy district, $100 per pupil, both grants would be cut by an equal percentage. Suppose the original calculations of the percentage-equalizing formula assumed that the central share of total educational expenditure would be 75 per cent but, after all local calculations were made, the Central Authorities determined they could cover only 50 per cent of total expenditures. They could then cut back every district's central grant appropriation by one-third. The poor district would not receive $500 per pupil but only $334—a cutback of $166 per student. The wealthy district would lose only one-third of $100 per pupil—a cutback of $33 per pupil. In effect, this means that the poor district—heavily dependent on central aid—must cut back its educational program very substantially. The rich district is only minimally affected by the cutback in central aid.

A more basic theoretical criticism can be made of the percentage-equalizing plan. In practice, the total reliance on independent local decisions to determine per-pupil expenditure for any local district often means that poorer communities—whose educational system seems unresponsive to local economic and social needs—may spend much less on their schools than relatively wealthy communities. In the latter, education is seen by most citizens as an essential means for achieving or maintaining their initially higher economic and social status. Where wealthy areas spend much more per pupil than poorer localities, some central aid may be granted to wealthy areas to provide high quality educational services, while poor districts are not even providing an adequate minimum program. Where money used to fund central grants allocated with the percentage-equalizing system is collected from a tax-base that covers the entire country, and where the general tax system is not very progressive, the poorer districts are, in effect, partially supporting the high quality education offered in the wealthy districts.

Guaranteed Tax-Base Plan

This plan is designed to guarantee every district in the country or region a given tax yield per pupil on the district's own locally-determined tax rate. As in the percentage-equalizing plan, the total amount of educational expenditure for the country is based on local projections. The Central Authority determines its share of these expenditures by deciding what value of the tax-base per pupil it will guarantee to every district.

This plan achieves results similar to both the foundation and percentage-equalizing plans. Central grants vary inversely with the wealth of each district, as measured by the value of each district's tax-base.

The formula is as follows:

$$\underset{\text{any district}}{\underset{\text{aid to}}{\underset{\text{central}}{\text{(A)}}}} = \underset{\text{tax-rate}}{\underset{\text{determined}}{\underset{\text{the locally}}{\text{(B)}}}} \times \left[\underset{\text{Central Authority}}{\underset{\text{guaranteed by the}}{\underset{\text{tax-base per pupil}}{\underset{\text{the value of the}}{\text{(C)}}}}} \quad \textit{minus} \quad \underset{\text{level}}{\underset{\text{the guaranteed}}{\underset{\text{which is below}}{\underset{\text{any district}}{\underset{\text{per pupil in}}{\underset{\text{the tax-base}}{\underset{\text{the value of}}{\text{(D)}}}}}}}}\right]$$

$$\underset{\text{by}}{\text{multiplied}} \quad \underset{\text{pupils in any district}}{\underset{\text{the total number of}}{\text{(E)}}}$$

The local district determines the money it wishes to spend per pupil by deciding what tax rate to levy. It then projects how much central aid this would bring to the district, and also how much local revenue could be generated by applying this rate to the district's actual tax-base.

A property tax, such as the local revenue-generating instrument, will again be used to illustrate the guaranteed tax-base plan. It should be remembered that this formula, like all the others, could be applied to any type of tax-base, or combination of bases.

Assume that a local district with 10,000 pupils (E) decides to levy a rate of 30 mills, .03 (B). Its tax-base is $10,000 of assessed property valuation per pupil (D). The Central Authorities will guarantee a tax-base per pupil of $15,000 (C).

According to the formula, calculated below, aid would equal $1,500,000.

$$\overset{(B)}{.03}\ (\overset{(C)}{\$15{,}000} - \overset{(D)}{\$10{,}000}) \times \overset{(E)}{10{,}000}$$

or

$$\$150 \text{ per pupil} \times 10{,}000 \text{ pupils}$$

To determine exactly how much this district can actually spend per pupil, calculate how much local revenue per pupil will be generated by applying the local tax rate to the guaranteed tax-base per pupil:
(B × D) or .03 × $10,000 = $300 per pupil. Thus, local taxes generate $300 per pupil. Central aid would bring in an additional $150 per pupil.

To increase its expenditures per pupil, the local district must raise its tax rate. This would increase both local revenues per pupil and central aid per pupil. If the district lowers its rate, both local and central funds per pupil will drop.

If districts have a larger tax-base per pupil than the Central Authorities guarantee, they receive no central aid. The Central Authorities must therefore guarantee a tax-base per pupil large enough so that when an average or reasonable tax rate is applied, sufficient revenues per pupil are generated to finance an adequate educational program. If this is not done, poor districts—which must depend on central aid—will find that even the combination of central aid and local revenues produced by an average or normal tax rate will not realize sufficient funds for a minimally adequate educational system.

Power-Equalizing Plan

This proposed plan, which is very similar to the guaranteed tax-base plan, guarantees a given tax yield (revenue per pupil) for any tax rate which a local district levies. What distinguishes this plan from the traditional equalizing formulas discussed above is that local districts that raise an amount of revenue per pupil above the centrally guaranteed amount would have to pay this excess to the Central Authorities for redistribution to districts with low fiscal capacity.

Assume this time that local authorities are expected to generate educational revenues by a local sales tax. Suppose the Central Authorities wish to guarantee $200 per pupil for each percentage point of the sales tax rate—for a one per cent sales tax, the Central Authorities guarantee $200 per pupil, for a two per cent sales tax, $400, etc. Thus, only the tax rate levied determines the amount of money that the local district can spend per pupil. The minimum yields on each different tax rate are guaranteed by the Central Authorities, so that no district depends on the actual yield that its own tax-base produces. In addition, no district may spend more than its own local tax rate guarantees as a minimum. Whatever local revenues are realized by this tax rate above the centrally guaranteed yield per pupil for a given tax rate must be paid back to the Central Authorities.

The following table illustrates how the power-equalizing formula would allocate central aid to a poor district (A), that decides to levy a two per cent sales tax rate, and to a district of average wealth or fiscal capacity (B), that levied a three per cent sales tax. The criteria for determining the relative wealth of these districts are illustrated in column two. This shows the actual yield a one per cent sales tax rate would produce in a particular district when that rate is applied to the district's actual tax-base.

(1) District	(2) Actual yield per pupil for 1% tax rate	(3) Centrally guaranteed yield per pupil for a 1% tax rate	(4) Actual tax rate selected by each district
A	$100	$200	2%
B	$300	$200	3%

	(5) Actual tax yield per pupil in each district (col. 2 x col. 4)	(6) Guaranteed yield per pupil for each district (col. 3 x col. 4)	(7) Difference between *actual* and *guaranteed* yield (col. 6 minus col. 5)
A	$200	$400	$200
B	$900	$600	—$300

Here District A by levying a two per cent sales tax would be guaranteed enough revenue to spend $400 per pupil. District B could spend $600 per pupil because of its sales tax rate of three per cent. Note that the tax rate which the local district uses is the only means by which its ultimate expenditure per pupil is determined.

In District A, a sales tax of two per cent generates only $200 per pupil in actual local revenue. Because the Central Authorities have guaranteed an expenditure of $400 per pupil to any district that levies a two per cent sales tax, District A will receive an additional $200 per pupil in central aid.

District B has a larger tax-base, that is, the value of retail sales turnover in the district. By using a three per cent sales tax, District B can generate $900 per pupil in local revenue. But because the Central Authorities have set the per-pupil expenditure guarantee—and limit—for a three per cent sales tax rate at $600, District B must pay back to the Central Authorities whatever excess revenue it generates by using a three per cent tax rate. In this example, District B must pay $300 per pupil into the central fund.

Such a formula equalizes the burden for supporting educational programs more than the other equalizing formulas discussed above. Local areas with very large tax-bases must return revenues higher than those guaranteed by the formula to the Central Authorities for redistribution to poorer localities. But often rich districts are under pressure to move items out of the school budget account into other accounts, while poor districts will do the opposite.

A substantial measure of local autonomy can be retained because any district can achieve whatever level of per-pupil expenditure which the local authorities and local population deem necessary; they simply raise the local tax rate to the level needed. But poor districts may still be at a disadvantage if they find it politically and economically impossible to levy a tax rate high enough to guarantee an adequate per-pupil expenditure. Part of such difficulty can be overcome by using weightings to reflect special needs of economically and educationally disadvantaged students.

The aim of the power-equalizing formula is not to equalize per-pupil expenditures, but rather to equalize tax burdens for supporting education by linking per pupil tax yields directly to tax rates.

District-Equalizing Plan

This proposed plan actually attempts to move the tax-bases or fiscal capacity of local districts towards equalization. This formula was developed because recent educational research showed that children of middle class parents tend to succeed more in school than children of poor parents.

Ultimately, the district plan is meant to equalize average levels of achievement in all local school districts by providing incentive for the rich to move to poorer neighborhoods and vice versa.

Other school financing formulas can use different kinds of local taxes to generate local school revenues, but the district-equalizing plan uses a local progressive income tax. The local income tax specified in the district-equalizing formula is not only progressive in the typical way; it would also be doubly progressive. The actual amount of local school income tax any individual pays would depend not only on his own income level, but also on his school district's average income level. A wealthy person living in a high average income district would pay more local school income tax than if he lived in a district with a low average income level.

To implement this doubly progressive plan for generating school revenue, the Central Authorities must establish multiple scales of progressive income taxes. Several steps would be required to do this. First, they must establish average family income levels for all local districts. Next, they must rank districts in ascending or descending order and decide how many different average income categories to establish. For example, all districts with an average family income of the lowest level to $3,000 per year would be in Category 1. Category 2 would range from $3,000-$5,000; Category 3 from $5,000 to $7,000; etc. A different progressive income tax scale must be developed for each category. The higher the average income level of the district, the higher the rates for all income levels in each category for that district. Rich people living in a rich district would pay more than rich people living in a poorer district. But poor people living in a rich district would also pay more than poor people living in a poor district. This difficulty could be overcome by taxing poor families at the same rate no matter where they lived.

It is administratively cumbersome, but this multiple income tax scale is important. It tries to overcome wide disparities of wealth between different school districts by providing financial incentives for individual districts to diversify the income levels of families living within a single school district.

In addition to providing a doubly progressive local income tax system for generating school revenues, the district-equalizing plan would allocate central aid to supplement local revenues on a scale that would make central aid per pupil vary inversely to the average income level of each local school district. Local districts whose average family income level placed them in Category 1 for taxation purposes (up to $3,000) would be guaranteed the highest level of per-pupil expenditures, say, $1,000 per pupil. School districts in Category 2 would be guaranteed $800 per pupil, etc. The reason for this type of expenditure guarantee is based on the belief that children from poor communities (defined here as school districts) need more money to achieve levels comparable with those of children from wealthier families and communities.

But varying levels of central aid will not mean that wealthy districts will actually spend less than poorer districts. Wealthy districts with high rates for local income taxation will inevitably generate sufficient local revenues for high per-pupil expenditure. Any district that wishes to spend more per pupil than the Central Authorities guarantee under the district-equalizing plan must pay all educational expenditures out of local funds because the district would then not qualify for central aid.

The district-equalizing plan primarily affects the individual and community decisions of wealthy persons. Citizens of wealthy districts confronted with high local taxes and low or no central aid for education would have the following alternatives:

—They can keep their community wealthy and exclusive by simply paying high local taxes.

—They can encourage lower income families to move into their communities by providing locally-financed, low income housing or by other means. This would lower the average income level of the local school district, reduce local school income taxes, and possibly make the district eligible for central aid.

—Wealthy families could move into school districts with lower average incomes and, hence, pay progressive income taxes on a lower scale.

If the wealthy individuals or communities choose one of the last two options, local wealth, as measured by average family incomes within school districts, would tend to become more equalized throughout the country or state. Even if the wealthy did not respond to the financial incentives of the district-equalizing plan to move to less wealthy school districts or to encourage poorer families to move into their districts, the district-equalizing plan would still guarantee poor districts a higher level of per-pupil expenditure than they would support locally, or than a conventional central aid formula based on an equal-expenditure-per-unweighted-student criterion would allocate to poor districts.

By basing the level of state aid per pupil on a measure of average income in a particular district, the district-equalizing formula produces results roughly similar to other equalizing formulas that employ the weighted student concept to produce additional revenues per actual student to school districts, which enroll students who are designated as educationally disadvantaged. The district-equalizing formula uses an implicit weighting system based entirely on average income criteria. Children in districts with low average incomes are assumed to require higher per-pupil expenditures than children living in districts of average or above average wealth.

The ultimate goal of the district-equalizing plan is to equalize average levels of student achievement among local school districts. It tries to promote socio-economic variations among families within the same school district and to provide the financial means to offer compensatory or enriched educational services in districts of low average family income levels.

Comments on the Foundation, Percentage-Equalizing, and Guaranteed Tax-Base Plans

These three traditional equalizing formulas, presently used in the United States, are instruments for allocating central funds to districts where the local authorities also have the power to raise local revenue to finance education. The basic intent of these equalizing plans is to enable all local districts to support some minimal level of educational expenditure per pupil. The formulas deal only with the problem of equalizing fiscal capacity in the public sector. Equalization of educational opportunity, in general, is a bigger problem and requires stronger and broader instruments. Nevertheless, these formulas provide a degree of equalization of educational opportunity. This equalization depends on a combination of several factors:

—How much local authorities can determine their own actual level of expenditure per pupil and tax rates. The wider the disparities in the value of the tax-base per pupil between local districts, and the wider the latitude for local decision-making, the less the degree of equalization actually achieved.

—The wider the fiscal capacity is between districts, the greater is the need for Central Authorities to pay a large proportion of total educational expenditures in order to maximize equalization.

—In general, the more accurately differing educational needs of students and differing costs of providing similar educational services in different localities are taken into account, the greater will be the ultimate equalization of educational opportunity achieved by the formulas.

Maximums and Minimums

Most applications of equalizing formulas would result in no central funds or even negative aid for the richest districts, and very large grants for the poorest. In practice, for political or fiscal reasons, many Central Authorities use maximum and minimum amounts of aid. A minimum guarantees that rich areas receive central funds, although the equalizing formula would not allocate them any or may even demand reimbursement to the state. Imposing a maximum on total aid per pupil prevents very poor districts from realizing the total central aid that an equalizing formula would normally allocate to them.

Central Authorities can also set a maximum on the locally determined expenditure per pupil to prevent wealthier districts from absorbing too large a share of the total central funds appropriated for local aid. When this imposed maximum corresponds to an expenditure necessary to provide a minimum acceptable level of education, the percentage-equalizing plan becomes similar to the foundation plan.

Selected Examples of Provision of Elementary and Secondary Education and Transfer of Funds to Institutions and to State and Local Governments by the Central Government

Different government levels provide education directly or transfer funds to institutions or other levels of government. Often the Central Government provides finance directly, as selected examples from developing countries indicate below.

Central Government in Direct Financing and Administration In some developing countries, the Central Government's Ministry of Education actually finances and administers some schools. The Afghanistan constitution gives only the Central Government the right and duty to establish and administer institutions of elementary, secondary, and higher learning. Tunisia follows the French example of a strong system, administered mostly by the Central Government. Malaysia also has a Central Government school system that maintains all types and levels of schools.

Not all developing countries have a centrally administered national education system, but in several countries the Central Government so dominates the financing, at one level or another, that the schools are actually part of a central system. Kenya's maintained schools usually receive the difference between expenses and revenue, most often only fees, from the Central Government.

The Central Government can dominate the secondary level, as in Kenya, Ghana, the French speaking African countries, Afghanistan, Cambodia, Malaysia, Indonesia, the Philippines, the People's Republic of China, the Caribbean countries, Argentina, Chile, Uruguay, Venezuela and other Latin

American countries. In the Philippines, Mozambique, Tanzania, Nigeria, Colombia, and Argentina, the Central Government fully finances most of the technical and teacher training.

Some Central Governments also provide primary education, although this is not as widespread as provision of secondary education. Central Governments run primary education systems in African countries which were French colonies; in Ghana, Afghanistan, Malaysia, Cambodia, the Philippines; and in some Latin American countries, such as Argentina, Brazil, Chile, and Colombia.

Ministry of Education Transfer of Funds Central Government financial activity in education in developing countries occurs mostly through the transfer of funds either directly to schools or to regional or local government levels which administer schools. To insure this transfer, the constitutions of Colombia, Brazil, and Taiwan require the Central Government to spend a given percentage of its tax revenue or its national budget on education. India's Central Government contributes a given percentage toward education.

Because developing countries are currently most concerned with primary education, most money transferred goes to the local level—whose authorities are responsible for administering primary schools.

Some countries also have Central Government transfers to the regional level. Nigeria, Ghana, the French-speaking African countries, Malaysia, Indonesia, Thailand, India, Colombia, and Brazil are among developing nations whose Central Governments assist at the regional, as well as the local level.

Some Central Government transfers also go directly to schools. The Ministry of Education usually administers these allocations, as determined by the legislative body that approves the national budget. There are many problems in allocating funds from the legislature directly to schools because officials are subject to political pressures.

Transfer of funds occurs through general grants or categorical grants. Both types are subject to withdrawal by the Ministry of Education—primarily, when the school does not meet the Ministry's minimum standards. Grants may also be withdrawn if facts are knowingly misrepresented or falsified by the recipient. Grants may also be cut in times of economic stress. Appropriations for school equipment and teachers' salaries are usually reduced first. Trained teachers may be fired and untrained ones hired at a lower salary.

Local or regional governments commonly receive general grants, as in Nepal, Uganda, Kenya, and Latin America. Most general grants are given on a matching basis, or as a percentage of earmarked revenue, and are frequently put into special accounts. Because transferring funds to the regional level does not guarantee that they will be spent on education, Colombia, Argentina, and other Latin American countries specifically earmark funds for educational purposes.

Categorical grants to institutions and other government level authorities are most prevalent in African and Asian countries. The amount depends—in an increasing number of countries—largely on an assumed local contribution, estimated from the revenue which the regional local authority hopes to raise. The Central Government then provides the difference between the local estimated contribution and the total estimated expenses. If the local authorities do not collect the full estimated amount, they may have to reduce the quality of service. This method is used in Kenya and the Cameroons. But in Taiwan, appropriations are sensitive to the financial capabilities of the municipalities and equalize financial resources among the rich and poor communities.

The most common categorical grant is for recurrent expenditures which comprise essentially teachers' salaries. The Central Governments of most developing countries offer some assistance for teachers' salaries. The method of finance varies but some techniques predominate. Once determined, the bill for teachers' salaries is paid entirely or in part by the Central Government through transfer of funds. This may be paid in a yearly lump sum or in quarterly adjusted estimates to meet inflation. Ghana, Uganda, Indonesia, and Thailand use the latter method. Nigeria and Ghana use a per-pupil sum to calculate the transfer needed to pay recurrent expenditures. Assisted schools in Kenya receive only a fixed percentage of their recurrent expenditures, but some teachers are assigned directly by the Ministry of Education. In Guyana the regional government provides a lump sum grant to each governing body for salaries, equipment, and other expenses.

Recurrent expenditure grants, usually carefully monitored by Central Governments, contain involved regulations that have to be met before authorities or schools receive assistance. All grants are subject to the Minister of Education's approval. Minimum standards for the quality of buildings, teacher certification, teacher salary scales, classroom size, curriculum, attendance, and efficiency must be satisfactorily attained before the Ministry of Education extends grants.

A major use of categorical grants provided by the Ministry of Education is for capital expenditure; this includes school, library, furniture, playground, equipment purchases, repairs and even outhouse construction. Two common methods determine the amount of the capital grants: a percentage of the project's estimated cost, and less common, an estimate of cost per classroom. Some African countries pay a fixed rate based on cost per classroom. Guyana is an unusual example of a third method where the grant for buildings includes maintenance of the buildings. All plans and estimates must have the approval of the Minister of Education, and construction costs must be substantiated by receipts. Tanzania is one of the few developing nations that requires a local contribution, either in the form of cash, labor, or materials before the Central Government will approve a capital grant.

Some types of categorical grants which are less frequently allocated in developing countries are of interest. Malawi provides grants for physical training and recreation in the schools, as well as expenses for examinations supervised by the Minister of Education.

Other Educational Functions of the Central Government The Ministry of Education in developing countries handles most transfer of funds to education by the Central Government. But other ministries and autonomous agencies, which either sponsor programs or transfer funds, are also involved. In Thailand, the Ministry of the Interior allocates all subsidies, while the Ministry of Education controls educational policy for primary education. In Uganda presently, ten ministries are involved in education. In Brazil and Venezuela, more than 12 autonomous agencies support educational activities in one way or another.

Ministries other than the Ministry of Education most frequently concentrate their work in education on capital expenditures. In Malaysia, the Finance Committee of the National Development Planning Committee, operating out of the Prime Minister's Department, initially approves all capital expenditures on education because funds are drawn from the consolidated development fund

In Indonesia, Rhodesia, Tanzania, the United Arab Republic, and Venezuela, the Ministry of Home Affairs or Department of Public Works is responsible for educational capital expenditures. Colombia has autonomous agencies to administer capital expenditures for primary and secondary education. Development Boards provide additional funds for capital expenditures, either through Central Government budget appropriations or through foreign assistance. These boards are common in Africa. In Latin America, such departments are powerful planning arms of the government but do not actually allocate funds.

Specific educational programs are often sponsored by the appropriate department. In Indonesia, the Ministry of Religion supervises and often finances religious schools. In the United Arab Republic, Tunisia, Thailand, Indonesia, Peru, and Ecuador, the Departments of Agriculture, Health, Public

Works, and Labor sponsor special schools for agriculture, public health, and engineering.

In Uruguay, responsibility for primary education is constitutionally independent of the Ministry of Education. A Board of Primary Education at the Central Government level presents its own budget needs to the legislature and is responsible for administering primary education.

Selected Examples of Provision of Primary and Secondary Education and Transfer of Funds to Institutions and Local Governments by Regional Government

Descriptions of regional, provincial or state level activity do not always clearly indicate the organization of educational activity at that level. Statements about regional responsibility seldom clarify whether the state has financial or administrative responsibility. Nor do they indicate how much of the money regional governments distribute is from their own resources and how much of it is transferred to them by the Central Government. Regional governments have a variety of responsibilities in education: from directly providing education to just supervising it; from providing their own resources to allocating those from the Central Government.

The constitutions of Taiwan and Brazil specifically authorize provincial and state governments to spend a specific portion of their budgets on education. India's state governments carry a major financial burden for education. The Philippine provincial governments are financially responsible for assisting secondary schools because national appropriations do not exist at the secondary school level.

Those Latin American countries with a history of federated governments give regional governments at least partial financial responsibility for education. The departments of Colombia, the provinces of Argentina, and the states of Brazil are regional divisions with powers to raise revenues for education. They also match special educational account funds from the national level and are responsible for administering them. Ghana is an example where provincial level governments administer the grants and subsidies of the Central Government.

Provision of Education at the Regional Level A few developing nations have regional governments that administer some kind of education. States in Nigeria oversee primary education. State governments manage primary boarding schools in India. In Madagascar, primary education is partly under provincial jurisdiction. In Colombia, Brazil, and other Latin American countries, regional authorities are largely responsible for administering primary education. Indonesia also gives the state responsibility for primary education.

In African countries, regions administer secondary education. The provincial governments of the People's Republic of China provide most secondary education. The Taiwan provincial government sponsors summer courses for the in-service training of local public school teachers at the provincial normal schools. In Brazil, the states are responsible for all public secondary education. The departments in Colombia also sponsor some secondary education.

Transfer of Funds from the Regional to the Local Level The funds transferred are usually categorical. Some are given directly to schools, but more often the transfer is between the regional and local educational authorities which administer several schools. The amount of the grant is frequently based on budgetary estimates of the local educational system's needs. Grants are usually given on a yearly basis. In Western Nigeria, however, the yearly grants come in three unequal installments: the first two are based on projected enrollments; the final grant is the "adjusted" one, based on the actual number of teachers and pupils for that school year.

In India, states provide general educational grants, as well as categorical grants to local governments. These grants are calculated by a percentage of the approved expenditure and a given unit of service. There is no mandated minimum local tax effort for education. States base their grants on a theoretical principle, which is not strictly related to need or efficiency of schools or districts.

The most common categorical grant at the regional level is for recurrent expenditures, especially, teachers' salaries. Regional authorities in Western Nigeria and Indonesia offer such categorical grants.

Most of the grants for capital expenditures are similar to those allocated by Central Governments. Western Nigeria provides construction grants paid on a matching basis for secondary grammar schools. In Thailand, the provincial governments administer capital funds allocated by the Central Government.

The Taiwan provincial government provides a few interesting categorical grants—expenses for pre-service and in-service training programs for teachers, and substantial subsidies for the education of aborigines.

In the People's Republic of China, provincial governments that control teacher-training schools, mostly for secondary education, assign the graduates to local schools and pay them directly.

Selected Examples of Provision of Primary and Secondary Education and Transfer of Funds to Institutions by Local Government

Even developing countries with radically different political philosophies seem to agree that local authorities must assume more responsibility, at least, for elementary education. This necessarily involves financial as well as administrative effort. At present, the extent of local responsibility is mostly administrative; their financial contribution to education is extremely limited.

A few countries are actively pushing for increased local financial effort in education. The constitutions of Taiwan and Brazil compel local governments, as well as the regional and central levels, to set aside a certain portion of their budgets for education. Nigeria, Kenya, and Tanzania make financing and organizing elementary education a local responsibility, whether it is done by town governments, tribal associations, or collectives. The only local bodies which fully finance and sponsor public school systems exist in the People's Republic of China. There the organization of the local government bodies differs significantly from those of most developing countries.

In most developing countries, local educational authorities are either autonomous or part of the local government structure. These authorities oversee all schools in their jurisdiction—fully subsidized public schools or partially subsidized private schools. Nearly all local governments receive substantial aid from either the Central and/or regional governmental levels. Their main job is to administer the educational assistance provided by higher levels of government, most often allocating Central or regional government grants to fully assisted public schools, or to partially subsidized private schools. Such assistance cannot be considered to be a local government financial effort in education.

These local bodies may also collect and allocate the small amount of resources for education gathered at the local level. Local government resources are used mostly for construction and maintenance of school buildings, or for supplying equipment.

Selected Examples of Governmental Assistance to Private Institutions

Private educational institutions include non-profit corporations, co-operatives with educational activity, and religious and privately owned schools. Most educational systems in developing countries were started by religious organizations or private individuals. As Central Governments assumed more responsibility for education, some governments made these private schools the basis of the national educational system. It was only natural to support them financially. In some developing nations, members of religious groups would not attend secular schools. The Central Government in French West Africa began supporting Moslem schools to get some general control of the country's education.

There are all levels of private schools in developing countries: there are pre-primary, primary, secondary; technical and teacher training schools; farm schools, schools for the handicapped, and religious schools. And all of these types of schools receive financial assistance from the government.

Transfer of Funds Most financial support to private institutions comes from the Central Government. It is distributed either directly, or through regional or local governments; thereby, creating a national educational system. Countries with strong state or regional governments have additional resources to assist private institutions. In Latin American countries, a subsidy from one level of government does not prohibit an institution from concurrently receiving a subsidy from another level.

General grants are common in Latin American countries, but uncommon in Africa and Asia. Categorical grants are the more frequently used form of assistance to private institutions, and they help enable governments to control the quality of private education. These categorical grants are like those awarded to centrally assisted public schools. The most common are given specifically for teachers' salaries, rather than for total current expenditures. Nigeria, Indonesia, and Malaysia provide private schools with financial assistance for teachers' salaries. Thailand provides salary assistance to only those teachers who meet certain qualifications.

Categorical capital grants and grants for supplies and equipment are also given by the Central Government to private schools in many developing countries, such as Malaysia, Thailand, and Nigeria.

Besides allocating categorical grants, Central Governments may provide credit for capital expenses to private schools. In Spain, credit has been extended at interests below the market rates. In some cases, rather than repaying the loan to the Central Government, the recipient must provide equivalent funds in scholarships.

Technical Aid and Materials The Central Government of Indonesia provides private schools with technical assistance through trained teachers, as well as with funds for school buildings, equipment, and supplies. The Thai government provides teaching materials to private schools to assure minimum quality standards. Central governments in some Latin American countries provide teachers directly to cooperative school systems.

Grants and technical aid to private schools are controlled by a variety of restrictions. Like public schools, private ones are subject to grant removal if they abuse funds or fail to maintain certain standards. Countries that foster centralized and public education place more restrictions on their grants to private schools than countries in which private schools are the basis of the educational system.

Selected Examples of Governmental Assistance to Households

In developing countries, governmental assistance to households is allocated according to three criteria: social right, need, and merit. Almost all developing countries strive to provide, at least, free primary education as a basic right of all citizens. Some have extended this right to the secondary level; still others, to higher education. Most countries want free education for all, but many developing countries cannot yet meet that goal. Thus, direct assistance to households based on need and merit helps relieve some of the burden of education for poor families in present educational systems. This assistance generally takes two forms: transfers for tuition, and transfers for student maintenance.

Transfers for Tuition Scholarships for fees and tuition are the most common transfers from the government to households. Cash is given to the parents, students, or to the schools for direct payment of student bills, or as remission of government collected fees or educational taxes. Scholarships are most often awarded by the Central Government, although in Nigeria, Guyana, and Botswana, scholarships are awarded by the local educational authority or regional government.

Generally, scholarships are financed in three ways: most frequently, from budgetary allocations made within the Ministry of Education or other ministries; from funds where the principal is either donated privately or publicly, and the income allocated as scholarships (Brazil and Guyana); and from funds voted by a government body constituted to finance scholarships (Malaysia).

Eligibility requirements are varied. Nearly all scholarships are awarded for merit and some for need. Merit is generally determined by committees that review examination scores and past school records. Countries that were once British colonies most frequently use the merit system. Some Latin American countries award scholarships on the basis of merit and need.

Most scholarships are given for higher education, but some are awarded at the secondary and even elementary levels. Scholarships at the secondary level are usually based on merit, but are often encumbered with residency requirements, sex and age preferences, and school specifications. Some countries providing scholarships at the secondary level are Thailand, Malaysia, and some Latin American countries.

Few scholarships are awarded at the elementary level because most developing countries are striving for "free" education. But Malaysia, Botswana, and Ghana have programs that remit fees to families who are too poor to pay, so that their children will not be denied primary education.

Transfers for Student Maintenance Even if basic tuition is provided free through public education or scholarships, many families are too poor to pay for texts and equipment, housing, clothing, transportation, and social services, including food. Consequently, much government support is allocated for these purposes.

Texts and equipment, such as books, paper, and pencils are a major item of government provision in many countries. Governments either give the school, or occasionally the parent, the cash to buy books and materials, or provide them directly to the schools. As part of the push toward free public education, the costs of books and equipment are being increasingly absorbed by governments, as is the case in Malaysia, Nigeria and Taiwan. Latin American governments are just beginning to provide assistance in this area at the elementary level.

Because of a limited number of secondary schools in many developing countries, boarding facilities are needed for students from distant places. This is particularly frequent in countries of British background. Swaziland helps pupils pay boarding fees. Ethiopia and Malaysia provide boarding facilities whose costs are absorbed in the schools' general financing arrangements. Most teacher training programs and agricultural schools in Latin America provide boarding facilities or give monetary compensation to students boarding outside.

Clothing is another maintenance problem that has become a governmental concern in some countries. An agricultural school in Ethiopia provides a clothing allowance to needy pupils. In Malaysia, clothing is provided at the elementary and secondary levels to needy pupils, to assure their attendance.

Transportation is also supported. In Nigeria and Malawi individuals are reimbursed for transportation costs.

A few countries also provide social services in their educational programs. The provision of meals and medical and dental services is becoming increasingly common in such countries as Tunisia, Brazil, Colombia, and Tanzania.

These benefits from government transfers to households do not always come without obligation to the recipient. The most common type of obligation is a commitment to work. In an Ethiopian agricultural school, students must work 12 hours a week in return for room, board, and a basic clothing allowance.

In addition to the types of assistance just mentioned, Central Governments in some developing countries offer loans to students. These reduce the recurrent expenditures for government, reduce the tax burden for citizens, and increase educational opportunity. Kenya has increasingly offered such loans as a major way of financing secondary education. Student Loan Institutions are becoming popular in Latin America, although their funds are applied only to higher education.

PRIVATE FUNDING

In addition to government funding to the private sector, there has always been private initiative in financing education.

Some private school systems are entirely financed by families, churches, foundations, corporations, and other groups in the private sector. But public education systems commonly receive some private financial support as well. This includes payments from families for school fees; grants from private organizations often for developing experimental programs; and special grants from private industry, sometimes applied to industrial training programs that become part of the public school curriculum. In developing countries, private individuals often donate labor and/or materials and funds during construction of a local school. Such private contributions are a major source of educational capital finance in some countries.

The disadvantages of private funding involve the problems created by the necessity of imposing school fees, which restrict access of education to richer students. Stipends to poor students partly alleviate this problem, but stipends are rarely available to all potential students from low income families. Rich and elite groups usually dominate educational systems that rely on school fees. Another disadvantage is that a public school system dependent on private funding—from organizations or industry—may be pressured into promoting the private interests of specific groups or individuals. But private funding from industry for vocational and technical schools and cooperation between industry and public vocational educational authorities would be a definite asset in planning and establishing these schools.

Private Contributors to Education

In many developing countries, private contributions constitute a major factor in financing education. These contributions and the efforts behind them are often neither specifically calculated nor adequately appreciated. These contributions—monetary and material—may be direct, indirect, voluntary or involuntary. The four major groups of contributors to private education are: families; business corporations; voluntary agencies; and collectives.

Families Parents pay fees for tuition, examinations, registration, laboratories, and other purposes in most developing countries. Uniforms, books, paper and supplies, transportation costs, and lunches are among the "hidden" costs. Besides the obligatory expenses, some families contribute money to schools. In Australia, the government will match amounts raised by parents or organizations to encourage contributions from the private sector. In Indonesia, wealthy parents loan money to schools.

Families can also meet their obligations to education by contributing products. Food is contributed to some schools in Nepal. Because government grants meet recurrent expenditures in many developing countries, capital expenditures must be met by the families. Land, labor, and materials are contributed by communities to build or maintain schools in Mozambique, Tanzania, the Union of South Africa, Rhodesia, the Cameroons, Indonesia, Thailand, the Philippines, Nepal, some South American countries, and elsewhere.

Business Corporations In developing countries, businesses have helped students to attend school, and they have maintained and established schools. Corporations have also directly sponsored a variety of schools, such as pre-primary, primary and basic literacy.

Often laws require businesses to undertake direct educational efforts. In the United Arab Republic, industrial establishments are required to pay for worker literacy programs, and to provide textbooks and materials. The Brazilian constitution requires that all industrial, commercial, and agricultural businesses employing more than 100 persons help provide free elementary education for employees and their children. In the 1950's, Malaysian rubber estates had to provide either primary education or arrange for transportation to existing facilities when ten or more workers' children lived on the estate. In the 1972 Educational Reform Program in Peru, a similar law was established. Business corporations also sponsor training programs—mostly to meet their own manpower needs.

Voluntary Agencies These agencies comprise religious missions, secular charitable organizations, parent-teacher associations, private foundations, and international organizations. They sponsor pre-primary, primary and secondary schools, literacy programs, vocational training, and special education, as well as provide meal programs, supplies and reading materials. Their major contribution is in the form of buildings and equipment. These schools receive government assistance, as well as support by student fees.

In Tanzania, as in other developing countries, voluntary agencies pay little toward recurrent costs but provide considerable capital funding. These voluntary agencies may even get occasional government assistance for large capital expenditures. But they have more freedom than public educational authorities to spend grants as they see fit.

Collectives These are not as common as other types of educational sponsors, but where they exist they are actively involved in education. The People's Republic of China provides the most interesting examples of collective educational efforts. Because of the current emphasis on decentralized education, communes, factories, and local collectives sponsor their own pre-primary and primary education. Secondary education is sometimes jointly sponsored by several collectives. The funds for schooling are either managed by the collective or sent to a higher authority.

Because of the work-study arrangements in the People's Republic of China where the collective is in charge of all production, collective responsibility for education is most practical. Each collective is fully responsible for both capital and recurrent expenditures. Primary school teachers are active members of the collective; they are paid as working members and assume work responsibilities, as well as teaching duties. They are often paid in goods and services, as well as with money.

Several South American countries also provide collective forms of education. Israeli *kibbutzim* at one time were another example of a collective system of education.

Schools in some developing countries also operate on a cooperative basis. They are fully financed by members of the cooperative system.

CHAPTER V

Government Financing of Higher Education

THE problems of financing higher education are common to both developed and developing countries. Rising costs and more slowly rising revenue, inflation, increased demand for education, competitive demands caused by expansion of the higher education system, demands for specialized labor and expensive equipment—all create problems in financing higher education.

In all countries, Central Governments take some responsibility for the costs of higher education. The amount they choose to spend may vary widely, but Central Governments do have common patterns for distributing their share. This chapter discusses the common distribution patterns of Central Government funds to institutions, individuals, lower levels of government, and councils for higher education. It compares the monetary and power effects of each transfer type, clarifying the advantages and disadvantages.

FINANCING PATTERNS OF HIGHER EDUCATION

Countries use various methods to meet the total costs of higher education. Before the utility of specific methods can be adequately evaluated, the components of higher education costs and the ways these costs are met must be understood.

The costs of higher education are:

Total Costs of Education = Operating Costs of the Institution + Expenses for Room and Board

The components of the funds collected to meet these costs are:

Total Funds for Higher Education = Government Share + Private Contribution + Tuition + Room and Board

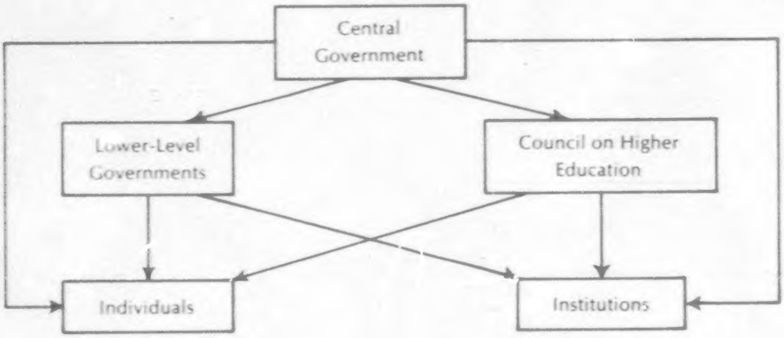
These formulas make comparisons of financing systems for higher education relatively easy.

In all countries, governments take some responsibility for the costs of higher education. What they choose to spend may or may not meet the total costs. In some socialist countries, the government takes total responsibility for higher education; thus, using the above formula, private contribution is zero, tuition is zero and room and board fees are zero, since total funds for higher education equal the government share. In many Latin American countries, there is no university tuition but students must pay most of their room and board. Private contributions are minimal. In this instance,

$$\begin{array}{l}\text{Total Funds}\\ \text{for Higher}\\ \text{Education}\end{array} = \begin{array}{l}\text{Government}\\ \text{Share}\end{array} + \begin{array}{l}\text{Private}\\ \text{Funding}\end{array} + 0 + \begin{array}{l}\text{Room and}\\ \text{Board Fees}\end{array}$$

In many African countries, all four components of the formula are used. Both tuition and room and board fees are required from students; private and public sources also contribute some funds.

Government funds can be distributed to institutions, individuals, government levels or to higher education councils. These government levels or councils give funds to institutions or individuals. These alternative paths of financial distribution are shown in the following diagram.



Specific distribution techniques exist for each of these relationships. There are monetary and power effects in each case. These monetary and power effects should be compared to determine which distribution technique is best for a particular country.

Government Transfer of Funds to Institutions

Governmental contributions to higher education are made mostly through funds to institutions. The amount allocated is primarily determined by the institution's operating expenses, tuition, and room and board fees. The government funds are given in the form of general or categorical grants.

General Grants to Institutions These can be given on the basis of various costs: per capita; operation of the physical plant; as a compensation for sliding scale tuitions; or on the basis of a formula or fixed sum per degree awarded.

Categorical Grants to Institutions These are given by one or many government agencies to institutions for study or research in specific fields.

Monetary and Power Effects of Government Grants to Institutions

The awarding of grants by the government has monetary and power effects.

Monetary Effects When there are many competing institutions, political influence or skill in obtaining grants often influences the distribution of both general and categorical grants more than financial need or contribution to educational objectives.

General grants may lead to increases in teachers' salaries and other operating costs in the overall budget, if institutions believe that government will always meet their expenses. Categorical grants also raise operating costs in particular areas of study if personnel or equipment for these areas are not readily available. This may also lead to higher tuition.

Power Effects These involve the relative amount of control the Central Government and institutions have over the educational process, and also the relative amount of control administrators and students have over the educational process.

There are two problems of control: government versus institutional control; and administrative versus student control.

Government versus Institutional Control

Grant appropriations for higher education are obviously advantageous to government. They give government control over its resources. They allow the government to shift priorities and spending at its own convenience. There is an obvious corresponding disadvantage to institutions because the financial status of education should not depend on the unpredictability of government.

From an administrative point of view, institutional grants are advantageous to governments. There are fewer institutions than students; thus, distribution of government funds is much easier through institutions than through students. Institutions need only to deal with the government for funds.

The effects of grants on an institution's autonomy and accountability have been questioned for some time. Grants may result in excessive institutional accountability to government, causing a loss of an institution's autonomy. Most educational planners consider autonomy a necessary prerequisite for a creative education sector. But if grants call for general accountability, such accountability need not necessarily encroach on autonomy. Government need not set educational policy by insisting on total accountability for appropriated funds. Political involvement could be limited to lump-sum appropriations and to judgments based on cost data, rather than on policy priorities. If institutions relinquish some autonomy, this need not affect their own internal policies. Only institutions with a single dominant source of funds might lose autonomy.

What distinguishes the power effects of categorical grants from general ones is that government has greater potential control of the direction of education through categorical grants than with general ones. Selective support of subject areas also allows for national planning, which is particularly important to developing countries. Institutions, in turn, may lose autonomy, depending upon their influence over the "categories" to be financed. But such a system is not necessarily bad for institutions. In addition, if institutions are not completely dependent upon categorical grants, government influence can be limited. Students, however, may lose the power to choose areas for study if the government chooses to finance subject areas selectively.

Administrative versus Student Control

Grants to institutions also shift the power relationship of students and institution administrators. It is much easier for administrators to retain control of financial and curricular decisions when funds are given to them directly, instead of to students.

Government Transfer of Funds to Individuals

Government transfer of funds to individuals has taken three forms:

tax credits, student subsidies, and student loans. Transfers of these kinds assume that both tuition and/or room and board fees are not free.

Tax Credit Tax credit to parents allows them to deduct from their tax bill a percentage of their educational expenses. Tax credits are of two types: a flat credit where every taxpayer deducts the same amount from his tax bill; and a progressive credit where each taxpayer deducts a specific amount determined by a progressive scale.

The flat credit provides some assistance to parents but in no way attempts to equalize the burden of educational costs between rich and poor families. On paper, the flat credit may seem to represent a greater percentage of credit, relative to income, for a poorer family than a richer one. But the proportion of income spent on education is usually greater for the poor family than the wealthy one. Thus, the burden is not sufficiently equalized in a flat credit method, and a flat credit is, therefore, regressive.

A progressive tax credit is intended to avoid the regressivity of a flat tax credit. Families with higher incomes would get less credit; families with low incomes, more credit. A scale might even be established where families with income above a certain level would get no credit.

Student Subsidies These can be allocated on the basis of merit or need. Ideally, such a subsidy would be in the form of direct student aid with no restrictions whatsoever. It could compensate for the higher percentage of educational costs incurred by poor families than by wealthy ones. To ease administrative problems, government could allocate the funds directly to the institutions, rather than to the students. The choice of institution would be left completely to the student and the amount would be based on student need.

Student Loans Loans used to finance higher education will be discussed in detail in the next chapter.

Monetary and Power Effects of Government Transfer of Funds to Individuals

Both tax credit and student subsidy are methods of transferring government funds to individuals. They have common monetary and power effects that are useful in evaluating the utility of these higher education finance methods in developing countries.

Monetary Effects For the government, a tax credit for education is a shift of funds from the general budget to investment in human capital. For an institution, government transfer of funds can cause instability of resources because funds are not necessarily committed to an institution for more than a year at a time. Also, such transfers do not help institutions meet costs not currently reflected in tuition. This may cause tuition to increase to cover all institutional costs.

With a tax credit, the student or his family must first lay out the cash—only at tax repayment time will he receive the tax credit. A subsidy provides the individual with ready funds to spend on education.

Power Effects The power effects of government financing the individual's education involve four relationships: rich versus poor; institution versus Central Government; student versus institution; and student versus parents.

Rich versus Poor

In theory, the basic advantage of subsidy and tax credit is that they help equalize access to education by giving low income people more power to obtain higher education than they had previously. Also, when not restricted in location or purpose, they are neutral towards public and private institutions. But these advantages are not always applicable in developing countries where, in general, the number of private higher education institutions is small. In addition, because students eligible for higher education have been screened throughout the educational system of many developing countries, student subsidies or tax credits for higher education will do little to increase access to education appreciably for poorer families, whose children seldom reach the screening process for higher education.

The subsidy has greater potential than the tax credit for helping the poor because subsidies can reach families too poor to pay taxes; they would, therefore, not be able to benefit from a tax credit system. Conversely, the wealthy would benefit from a tax credit more than the poor because they can afford to pay taxes and more of their children attend school.

Institution versus Central Government

Because tax credits and student subsidies provide only indirect financial assistance to institutions, they have the effect of reducing government power over higher education. But there is nothing to prevent governments from restricting the use of tax credits or student subsidies—say, to specific subject areas—thereby, significantly increasing control over the educational process.

Student versus Institution

Some theorists fear that if there is more than one educational institution, substantial funds given to individuals would give students a disproportionate control over the direction of education. Others believe that monies students receive are government funds and could easily be controlled by government. In fact, they assert that institutions should fear government, not student control. In addition, because consumers in a market with few sellers have little control over the products they buy, there is no reason to assume that consumers of education in a similar market will have a disproportionate influence over educational suppliers. In many developing countries, there is only one university and it is substantially controlled by the government. In such situations, the fear that students will control the university through using what is essentially government money may be unrealistic.

Student versus Parents

In this relationship, tax credit and student subsidy have distinctive effects. A tax credit allows parents to maintain a significant influence over their child's choice of institution and expenditure patterns because it is the parent who would most likely utilize the tax credit. With a student subsidy, the funds are used as the student chooses, making choices independent of parents, if the student wishes.

Government Transfers to Lower Level Government and Councils for Higher Education

Central Governments can transfer funds to lower government levels or to councils for higher education which then allocate these funds to institutions or to individuals. Such distribution is usually done through general or categorical grants. Such a system has monetary effects similar to government transfer of funds to institutions.

Power Effects Such transfers shift power from the Central Government either to other government levels or to councils for higher education.

Giving funds to lower level government has the obvious effect of increasing regional or local authority over higher education. This may make national planning for higher education more difficult.

National councils for higher education often have the advantage of retaining control of higher education at a high government level, but they may also exercise autonomy beyond that desired by the Central Government. If the effects of Central Government control are counter-productive, national councils may serve as buffers between institutions and the Central Government.

SUMMARY

Where Central Government finances the higher education sector, it can choose from a variety of finance methods. It can give funds to individuals, to institutions, to other government levels or to councils for higher education. Each distribution mode has different monetary and power effects. Decisions on which method or methods will be used should be based on a clear evaluation of these two effects, considered within the cultural and political realities of the country.

CHAPTER VI

National Student Loan Institutions

IN the past ten years, the costs of higher education have increased alarmingly. Coupled with budget cut-backs, this has led to reduced access to education for the economically deprived segments of populations.

Besides a search for more efficient uses of available resources, a new method of financing which uses the credit system is being considered. Credit for investment has traditionally been confined to tangible goods, such as equipment and buildings. The use of credit to invest in non-tangible goods—especially, education—has recently come to be considered as a new way to increase the future income of individuals and society.

Student loan institutions provide credit for those who are working towards a higher education. Student loan plans within individual educational institutions are widespread and have existed for a long time, but national student loan institutions are quite recent. In 1972, only a little more than a dozen national student loan institutions (SLI) existed in developing countries and, mostly, in Latin America.

NATIONAL STUDENT LOAN INSTITUTIONS AS INSTRUMENTS OF POLICY

National student loan institutions are not policies in themselves, but rather instruments of policy. As such, they should be evaluated in relation to other instruments developed to carry out policy. SLI affect four major policy areas: inter-generational equity; social equity; shifting the financial burden from the public to the students; and generating funds for higher education.

Inter-Generational Equity

Where higher education is financed by fees or taxation, the older generation pays for educating its young by reduced consumption. If higher education is financed through loans, each generation pays for its own education. After the first loan fund is set up (by taxation, reduced government expenditures, or newly created credit), a large part of new loans would come from repayments of old loans, over an extended period. Thus, the fund becomes self-perpetuating. If the number of recipients expands, a small amount of new funds is needed. Once a fund becomes self-perpetuating, no generation pays for the next one's education.

Social Equity

Governments have become increasingly concerned with redistribution of income. There are humanitarian or ideological reasons for this, as well as a growing belief that increased income equality between social classes and regions is good and even necessary for continuous economic development. Higher education can be made accessible to qualified students whose socio-economic class or geographical location might otherwise prevent their enrollment. Among the ways of achieving this equality are: grants and scholarships for tuition and maintenance; subsidies; and tax credits. These all require either additional public monies, or a shift of resources from other areas designed to foster social equity. SLI allow shifting the cost, partially or totally, of this policy of equity for higher education from the general public to the student.

Shifting the Financial Burden from the Public to the Students

Increasing the student's share in the costs of higher education can be achieved by changing or raising tuition. When private resources cannot readily meet such increases, or when students and/or their families cannot or will not pay for higher education's increased charges under present conditions, money made available through SLI provides a way of lessening current burdens by extending them into the future.

Generating Funds for Higher Education

This policy is achieved in different ways: higher taxes that increase public funds; or fund raising campaigns directed at both large foundation gifts and at small donations through alumni associations.

SLI provide new funds through credit and, also, increase private savings that divert additional monies to higher education because repayments of student loans may create extra forced savings.

EFFECTS OF STUDENT LOANS ON THE INDIVIDUAL BORROWER

In the short run, the loan makes higher education possible. When actual charges are lower than the costs of education, the borrower is also getting the subsidy that is granted only to those selected to go into higher education. He also receives subjective benefits, such as enjoyment and personal fulfillment.

In the long run, compared with graduates from lower levels, those who complete their higher education obtain higher earnings, better job security, a wider choice of jobs, and more social mobility. In the short run, the financial burden of a loan and assumption of a long run economic risk must be considered by the student when he contemplates the advantages.

Burden of the Debt and Assumption of Risk

The size of the debt and the rate of repayment (interest plus principal) determine the size of the burden of the debt. The ratio of repayment to income determines the loan's effect on the borrower. If a debt exceeds a sizable portion of life income, it can become over-burdensome because of its duration, the psychological stress involved, and because it reduces possibilities of borrowing on housing or for major appliances.

By taking out a loan, a student assumes all the risks of his investment. The average expected return is high but it varies widely. Low income borrowers are further disadvantaged because their families cannot provide as much economic help at times of particular needs as those of high income borrowers.

The consideration of the burden of debt and assumption of risks is so important that several plans, such as income contingency forms of repayment, have been proposed which are considered on p. 97.

POSSIBLE EFFECTS OF STUDENT LOANS ON HIGHER EDUCATION

In general, the efficiency of higher education is increased by the operation of SLI. In particular, the following effects may be noted:

Reduced Dropout Rates Those who would be forced to drop out for economic reasons may continue. The student's economic commitment and goals give him added incentive to complete his studies.

Raised Intellectual Capacity of Entrants Access to higher education has been based on economic, not intellectual levels. Shifting the entrance criteria from an economic to an intellectual one increases the efficiency of higher education because the students are more qualified to benefit from it. The borrower's group as a whole does better than the general student body, according to a consensus of researchers in this area.

Increased Efficiency Where low enrollments relative to capacity cause a high cost per student, higher enrollments resulting from student loans may lower unit costs.

Curriculum Reforms Where different universities offer similar programs, whose costs are covered mostly by tuition, administrations may respond to "student economic power" (acquired by student borrowers) and offer new or more relevant courses. Universities may also improve their efficiency by experimenting with innovations, such as shorter duration of degree programs, which reduce costs to students.

When SLI create competition through indirectly supporting new private universities in developing countries, this may improve the quality of education and the efficiency of the system as a whole. But when monopoly conditions exist and administrations are not subject to economic pressures, an increased availability of funds to students may only result in higher costs per student through uncalled for salary raises and wasteful expenditures.

Increased Demand for Higher Education The availability of student loans on favorable repayment terms—if not accompanied by excessive tuition raises—increases the demand for higher education. Whether this demand should be translated into an effective expansion of the system is determined by broader considerations than the availability of student loans. But when expansion is considered, the simultaneous availability of funds from student loans is a favorable factor for expansion.

Increased Independence from Public Funds Monies made available to the system through student loans not only provide tuition support; they also make the system more efficient by making it less dependent on government support or on public funds—both of which may fluctuate.

EFFECTS OF STUDENT LOANS ON SOCIETY

Student loans provide lower socio-economic classes greater access to higher education. These students bring the university closer to the realities of society. Such opportunities eventually include in a country's decision-making process persons who are better attuned to its social needs. Further, by basing entrance requirements on intellectual rather than economic criteria, a program of student loans benefits society by making available a considerably greater portion of talent and energy that might have been lost due to lack of opportunity.

OPERATIONS OF A NATIONAL STUDENT LOAN INSTITUTION

The legal nature, administrative structure, and range of functions of SLI should vary according to the political, cultural, and economic context of a particular country. But there are useful criteria that can apply in general to any type of SLI.

Legal Nature of SLI

Legality may be an important determinant of a program's success. There must be some characteristic of public ownership to fulfill the institution's social goals. The implications of equalizing educational opportunity—through subsidies and manpower goals achieved through loans for foreign study—suggest public intervention. But characteristics of private enterprise are also vital to effective management: administrative flexibility; the highly specialized banking function; action against defaulting borrowers; and greater immunity from political pressures of university students in developing countries—all are handled better by the approach of private enterprise.

Ideally, SLI should combine the positive aspects of both public and private institutions. Either a private or a public organization—where the Central Government is represented on the board of directors and can veto certain decisions—can accomplish this.

Administration of SLI: Policy Decisions

Top management's policy decisions deal with two broad areas: generation of funds; and guidelines for operations, which include selection of qualified applicants, formulating policy on interest charges, recovery of principal, and amounts of lending.

Generation of Funds Funds may be accrued by selling bonds to public and/or private agencies. This is facilitated by:

- —Tax incentives for purchasing the bonds
- —Requiring private investment corporations to maintain a certain percentage of their portfolios in SLI bonds
- —The government acting as a guarantor of the loans, a common procedure in foreign loans to SLI.

Funds may also be accrued from the central banking system. A special re-discount credit line for education can be provided similar to those social or promotional credits available to industry, agriculture, or home mortgages.

There are other methods of generating funds through the central bank. These include: guarantee of subsidy of SLI notes by absorbing the initial discount costs of the bonds' value; and accreditation of deposits of public funds from various ministries, social security, retirement funds, special reserves, etc., so that banks can earmark these funds as credit for SLI (causing such funds to expand automatically with economic growth and to adjust to changing price levels).

Funds may also be generated through the transfer of public monies. When SLI are public agencies, they normally receive national funds on a recurring fiscal budgetary basis. When they are private institutions, they can receive public funds on a contractual basis or through other agreements.

Still other ways of generating funds are possible through donations from private foundations, private corporations, or from individuals. The establishment of an endowment savings plan within the SLI is also possible. Such a plan is facilitated by the government underwriting a share of the endowment costs. Such a plan offers the government two important benefits: the government's future socio-economic burden is reduced because of a wider base of persons with a higher education, and lower-middle and low income groups would be encouraged to participate in long run savings plans.

Guidelines for Operations Policymakers have to reconcile the conflicts between social goals and the principles of sound investment. Good financial practice favors low risk borrowers—students whose parents have property and other assets. A concern for greater social equity through increasing access to higher education for those in low income groups can be contrary to accepted investment practices.

Granting loans to students at different stages in their studies can also present a conflict. Those about to graduate represent a lower academic risk and a shorter repayment period. But this safer financial risk must be weighed against the long-run social considerations. Increasing access to higher education for low income groups calls for giving preference to freshmen students.

Loans

There are important aspects of the loans that must be governed by specific rules. These are: coverage of loans; annual versus complete loans; and rates of interest.

—Coverage of Loans

Student loans can cover tuition and other direct educational expenses, transportation, and living expenses (with an allowed increase for family support in case of marriage). Standards have to be set on limitations of loans, including yearly ceilings, total funds borrowable, or the restriction of funds for foreign study when training is available domestically.

—Annual Versus Complete Loans

Currently most loans are given annually for domestic study. But sound financial and social benefits may be achieved by a commitment that assures coverage until the degree is completed, with funds withdrawn when a student's performance is below established academic standards. On a practical level, this policy would cause an overall reduction of administrative costs.

—Rates of Interest

Usually the management and distribution of self-supporting funds are based on covering the costs of administrative overhead, depreciation, and bad accounts. It is standard for interest rates to include the coverage of possible future losses. But the social goals of the SLI concept can be substantially impaired if decision-makers are conservative and cautious with interest rates.

Yet, if the borrower's payments after training are too high, the very benefits that should accrue from educational opportunity will be undermined. There is also a possible loss to society through a "brain drain" when other regions or countries offer higher earnings that lure the new graduate away—not only for higher earnings, but also, partially, to escape repayment of the loan.

In order to achieve the social and redistributive effects of SLI in developing countries, the interest rate should be lower than prevailing rates for any other available long-range loan and should never exceed mortgage or development loan interest rates.

If the SLI charge interest rates lower than those prevailing in the money market, a subsidy has to be provided. When SLI foster greater equality and social mobility, equalizing education has an important additional social function. But this has a cost. This cost is the difference between commercial interest rates and the "softer" social terms advocated for SLI. Because SLI are meant to replace fiscal funds, lower interest rates should also be supported because the SLI's function would otherwise fall largely on the government.

—Terms of the Loan: Repayment Schedule

There are two basic methods of repayment of the loan: fixed and variable schedules.

Fixed Schedule Repayment Plan: Given the initial loan, the repayment period, and the interest rate, the amounts payable every year can be calculated. The schedule could be linear with constant payments or payments at any pre-agreed schedule. This repayment schedule is the same as that for most mortgage payments. In this form of repayment, special care is necessary to provide flexibility whenever circumstances impose an unduly heavy burden on the borrower. Such cases would be when a borrower fails in his studies, resulting in the fact that he will not have the same job security or as much earning power as graduates; or when a borrower becomes unemployed, involuntarily or voluntarily, whether to pursue a higher degree or to have a child.

Variable Schedule Repayment Plans—Income Contingency Plans: The burden of repayment of a student loan, even over long periods of time, varies. Some plans make repayment contingent on the borrower's income. This eases the burden of repayment and increases the attractiveness of borrowing.

An income contingency student loan involves a percentage or rate, fixed or variable, applied to the borrower's income to determine the annual payment. It can apply to total income, income above a minimum level determined by a living allowance, or income above that earned by persons with a lower educational level. An income contingency student loan also involves a maximum liability preventing overly high repayment by high income earners which encourages them to participate in the pool of borrowers. Upper limits are set on annual repayments, or on the accumulated repayments. In either case, when the borrower's accumulated repayments reach this limit (sometimes set at a multiple of the original principal), the obligation expires. There is a maximum term limiting the years of repayment. Usually whatever is still owed at that time is forgiven.

Some income contingency plans equalize the burden and also mutualize risks among a group of borrowers. Because the fund is replenished at the average rate, high income earners would subsidize low income earners. High income earners could also withdraw from the plan, paying a penalty where the maximum accumulated repayments are a multiple of the original loan. These plans automatically take care of the contingencies discussed above because they are usually related to income. Some cases of complete forgiveness of the loan also occur.

A special case of repayment applies to women. In some countries there are few women in higher education, but women are comprising an ever-increasing number of university students. If women repay a percentage of their own income, this means a large subsidy for females because many women do not work after marriage. But if repayment is based on the husband's income, the woman enters marriage with a negative "dowry."

In general, the income considered should be joint income. There should be no difference between a student loan incurred by the wife, the husband, or any other family member, especially when more and more women work in the early years of marriage. Therefore, the family income can be considered as a base for repayment.

Forecasting Resources for SLI

A major problem for any lending agency is the assessment or forecast of cash flow. In the case of SLI, a borrower only contracts to repay a small amount yearly, or a percentage of his annual income only after a time lag between the borrowing and repayment periods. But the costs of funds and administration continue for the loan institution.

Cash flows for fixed schedule repayment (principal and interest) can be calculated if the following variables are known: lag years of repayment; rate of inflation; real interest rates; mortality and insurance rates; statistical per cent of defaults; and administrative costs.

To calculate income contingency loans, two other variables are needed: income by age and projected income. With these variables known, a simulation and sensitivity analysis can forecast the need for resources under different conditions. Most simulations done in the United States show the debt profile of the SLI due to a single loan rising in the loan's early years because of deferred repayments, and in the case of contingency loans, because of initial low incomes. Early cash inflows from repayments may be initially less than the funds necessary to service the loan institution's debt and its administrative costs. After a certain number of years, depending on the rate of interest charged and total repayment period, the debt falls, as shown in the following figure:

Debt Profile of a Single Loan

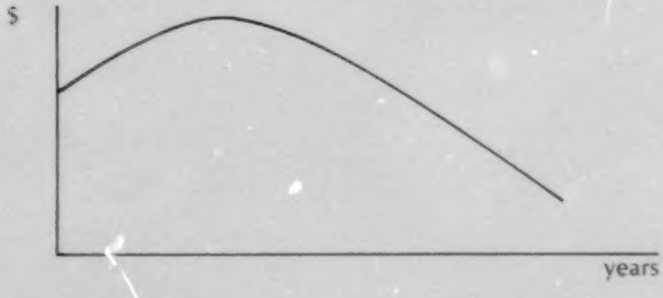


Figure 1

If the fund is to offer a constant volume of lending every year, the debt profile of the fund in a semilog scale would look like this:

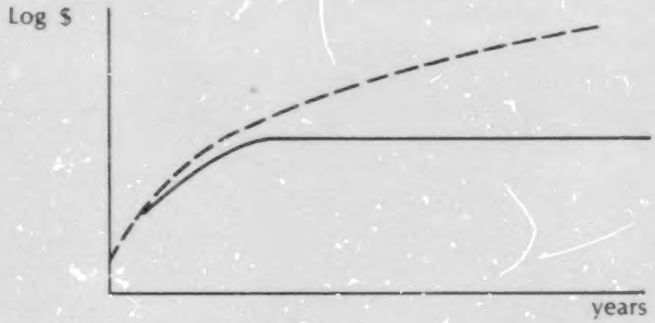


Figure 2

If there is also a monetary inflation rate, the total amount of cash needed is represented by the dotted line in Figure 2. The period when repayments of old loans equal the outflow of new loans—plus the obligations due on old ones—comes long after the initial establishment of the SLI.

Such analysis and simulation is imperative before establishing SLI. Very often new SLI make loans and find that instead of expanding their rate of lending, they must contract it because they lack cash. Only after carefully examining different alternative combinations of interest rates and repayment periods can they ascertain, given an initial amount of resources, their yearly volume of lending. Having determined this, they can project the inflow of resources needed to keep the institution sound.

Operational Level

Student loan plans are not common credit programs, but social credit programs. Operations should reflect financial aspects but also reflect social goals. The effectiveness of these institutions should be evaluated not only by financial soundness, but also by social performance. Operations should therefore include: lending and recovery of student loans; careful selection of candidates; counselling and guidance; placement; follow-up on borrowers; and public relations and credit promotion.

Lending and Recovery of Student Loans Custody of contract, money delivery operations, collateral insurance, bookkeeping, billing and filing procedures, and the enforcement of payment must be efficiently handled in the lending and recovery of student loans.

SLI's operations need a specialized technology in accounting, actuarial computation, filing systems, and data processing similar to that used in managing credit card operations.

Should administrative costs to recover funds be too high, the very benefits of revolving funds will be threatened, if not completely offset. When operating expenses become excessive relative to collected funds, it may be preferable to shift from loans to free grants because of the system's inefficiency. Sometimes the task of recovery of loans can be facilitated when SLI are included in insurance legislation protecting other institutions, such as cooperatives, from bad debts.

Sometimes the national revenue service becomes the collection agency, whose effectiveness may be enhanced by special compensatory tax relief or credit for loan recipients. Special tax credits for repayment of the principal are desirable where the loan replaces a formerly free education. Here the borrower is in the first generation to carry a higher burden. By repaying his loan, the borrower pays for an education, which was formerly free or heavily subsidized, while he is concurrently obliged to meet normal income tax payments. Special tax credits are a just compensation during the repayment period.

Selection of Candidates Established standards of student eligibility for the level of education to be financed are applied in the initial evaluation of the applicant's ability to maintain academic standards and to complete the program. Eligibility conditions are normally of two kinds: socio-economic status, and academic record.

The first, socio-economic status, can be determined by parental income or property and other assets.

In evaluating the second, academic record, standards vary from country to country. The assessment of student ability also varies. Sometimes only the transcript of grades is required. Sometimes, an examination is required. Sometimes there is an aptitude test to aid in giving vocational advice and counselling, as well as for determining ability to meet minimum academic requirements. Some funds limit eligibility by restricting loans to students in the last two or three years of their higher education studies, especially when money is limited or when there is a reasonably low expectancy for repayment.

Another standard for selecting candidates is the level of education. Most funds cover a specific level: professional, post-graduate, or even post-secondary vocational training, such as nursing.

Recently, assisting the scholarship programs for secondary school students has been explored. This would increase the pool of secondary school graduates from low-income families. Student loans may also induce borderline students to pursue higher education, when they know that at least their financial barriers to further education are eliminated.

Evaluating a student's ability to meet academic standards is part of the selection process. Normally, universities also screen applicants, so this administrative burden can be left, partially or totally, to universities. Sometimes, universities themselves create a common service, such as a national testing service, to diminish the per student cost. This service is sometimes established by the government.

Counselling and Guidance Beyond the issue of SLI's making higher education accessible is the problem of assuring a student's eventual success. The SLI need not maintain a vocational guidance service but it should be aware of its responsibility to assure that guidance is provided. Vocational guidance and advisory services may already exist within the country and can be utilized on a contractual basis. The SLI may initiate the development of an agency to perform such services. Counselling is especially important to students in foreign countries or to low-income students from rural areas who come to the city.

Placement A specialized office with broad contacts in the government and private sector must help the graduates get suitable jobs. This is especially true when the borrowers come from low income groups and have few contacts in the labor market for which they are trained.

Good placement benefits the borrower through higher incomes. The SLI also benefits from higher paying jobs. There is less risk in their loans and they are better protected in times of unemployment.

Follow-Up on Borrowers Long-range, longitudinal supervision helps indicate a program's success and should automatically be included in every loan agreement. Addresses for many borrowers who move often must be systematically updated, especially for borrowers who study abroad. In addition to data relevant to the redemption of the loan, the follow-up should produce information, such as social mobility which shows the social impact of SLI.

Public Relations and Credit Promotion One management function of SLI is to develop a good relationship with government, business, and the public. SLI's role in developing social equity and in promoting development must be recognized and appreciated to secure financial support.

Promotional endeavors also have to be undertaken to "sell" this type of credit to potential clients, lenders, and borrowers. Advertising the availability of loans to pursue higher education and its benefits to lower-income students is necessary.

Credit promotion or public community relations programs can be thwarted by socio-economic and socio-cultural factors. Generally, in the less developed countries, the proportion of high school graduates in the lower income population is relatively low. Because this target population is quite diffuse, advertisement becomes costlier than that directed at higher income groups.

Another obstacle is the prevailing negativism of low-income groups toward the use of credit. Members of the so-called "culture of poverty" are exploited by dishonest moneylenders who charge illegally high rates. Parents of many of the eligible students may not have completed an elementary education or are illiterate. In addition, their experience with the banking system is largely confined to contracts with usurious "credit systems." Consequently, such parents can frequently be expected to be suspicious or, at least, reserved towards using any form of credit.

Any program aimed at "selling" the concept of student loans to the special groups in question will need to be designed sensitively and to be carried out carefully, so that the existing socio-economic and cultural constraints will be overcome.

Other Functions of SLI

It has been argued that SLI should implement manpower plans. While some of the student loan programs do in fact maintain a special office responsible for human resources, planning this activity appears to be beyond the essential nature of the SLI. There are strong considerations against the inclusion of this function. SLI occupy only one specialized segment within higher education and, certainly, a very minor one in the entire educational process, formal and informal.

If SLI are to operate at the low-income group level, then manpower planning within the SLI might have the undesirable effect of channelling only low income students into certain types of professional training. Undoubtedly, SLI must be aware of national manpower plans, but the task of implementing its own specific allocation of monies among academic fields and professions is complicated enough, without SLI's attempting to plan national human resources as well.

Most of the specially designed institutions for granting student loans also manage scholarship programs. There are two important reasons for this: there is a substantial economic saving because some administrative aspects for management of student loans are quite similar to the management of grants; and such management provides excellent flexibility in modifying the student burden. Because individuals differ extensively and credit norms need to be more standardized, a combination scholarship and loan can provide an almost tailored term, interest, and repayment schedule, based on individual circumstances. Such a combination also decreases the imbalance that could appear between grants—free of future financial commitment—and student loans. Joining student loan and grant programs appears to be highly beneficial.

It is commendable for SLI to perform all the functions mentioned above, but they may become entangled in too many peripheral goals and neglect their main objective.

Keeping the operations simple is critical, and keeping overhead costs low is essential. Strict regulation of these peripheral activities through cost accounting is desirable to determine how costly they are. If they are very costly, outside funding should be considered.

A SPECIAL TYPE OF SLI: THE STUDENT LOAN DEVELOPMENT BANK (SLDB)

The lending capacity of the SLI could be increased by making it a development bank linked to the Central Banking System. Development banks are institutions created to channel resources into different sectors considered strategic for economic development. National development banks are usually assisted by central banks which subscribe to their capital stock and bonds, re-finance their loans, and guarantee their obligations in the internal, as well as international markets. Development banks are also specialized institutions (like agricultural credit banks, industrial banks and mining banks) which mobilize resources for a specific sector.

The idea of a development bank for student loans is based on the need to channel resources into education, which is a strategic development sector. It is based also on the need for a specialized institution to handle these resources.

SLI have valid reasons to claim a recognized share in the formal credit system. They are specialized institutions that provide capital to a sector that is more complex and uncertain than the agricultural or industrial sectors. The complexity and uncertainty involve a higher degree of risk and call for skillful technical specialization. SLI also have a function that is not only associated directly with economic growth but also wth social improvement. Like other strategic activities that require long and special "soft" terms, the low income group students require special attention. All this along with existing imperfections in the capital market for education that prevent the full exploitation of investment opportunities in this sector make it desirable to include SLI as equal members in the organized credit system of the economy.

The SLI as a Development Bank

The banking system requires that a chartered member undertake all the responsibilities as well as privileges of membership. A student loan institution can do that. Foremost, a member of the banking system must make the structure of its capital conform to accepted banking norms. This structure allows the multiplication of resources for lending, the so-called "financial leverage" of the institution.

Many existing financial development institutions have been formed with the following capital structure:

Paid-in share capital	100 units
Retained earnings	....
Net worth	100 units
Subordinated loans	150 units
Borrowing base	250 units
Other debt (3 x base)	750 units
Total capital	1,000 units
Ratio of total debt to net worth	9 : 1

Total capital here is distributed mainly into outstanding loans and equity. The "other debt" of the institution is "balanced" by maintaining a ratio (normally 3:1) with equity. Equity, then, provides protection and security to investors, earns income, and allows the institution to remain solvent. The level of risk to investors is also reduced because of subordinated loans. These are loans granted by the Central Bank to a development bank, normally for 30 years without interest, and with a grace period for initial repayment of ten years; "subordinated" indicates that in case of bankruptcy owners of this debt are paid after all other creditors. These subordinated loans are counted in the borrowing base to subscribed capital and, therefore, are subordinated to other debtors. The outstanding loans/equity ratio is used to guarantee the revenues needed for the institution to meet current expenditures, profits, and to increase its reserves. Clearly, a similar structure can be used by SLI, if ways are found to obtain "other debts" at rates slightly lower than those charged to borrowers—rates which would cover operating costs and still provide a rate of return to investors.

Sources of Capital for SLDB

These may include: domestic capital markets; savings generation; and international borrowing.

Domestic Capital Paid-in capital in the form of shares and "other debt" can be raised in the existing domestic capital markets. This can be accomplished in three ways:

Government Enforcement

When public financial companies are started, the government commonly dictates the amount and proportion of capital to be subscribed by other public agencies, financial or otherwise. Frequently, this type of institution receives part of existing public funds, such as social security or stabilization funds. For constitutional reasons, Central Governments in most countries cannot compel states and municipalities to subscribe to shares or buy bonds but they can exert considerable pressure for them to do so.

Sharing in Privileges of Other Financial Institutions

Many financial institutions have special prerogatives for borrowing in the money market. Savings banks are often required to purchase bonds issued by mortgage institutions up to two per cent of their capital and reserves; commercial banks up to two per cent of their deposits. Sometimes mortgage bonds are tax exempt. The bank for student loans can be designated as an institution that shares these important concessions with other privileged institutions.

Using Private Sector Resources

Private corporations might be allowed to increase capital reserves that are tax exempt, whenever they underwrite or purchase SLI bonds. The amount of the increase would be determined as a fraction of both present ceilings for reserves and the amount underwritten or purchased. This mechanism might appeal to a private company because it allows the company to retain bigger profits.

Generating Additional Savings It has been suggested that existing sources of savings, such as social security funds, be diverted to education—

especially for up-grading and re-training of workers. This system would provide more resources for education, but would not generate more savings. Another way to provide funds for SLI would be for them also to become savings institutions that attract funds from lower income people. The SLI would offer high interest rates tied into the cost index of higher education (in some developing countries inflation may run as high as 50 per cent a year) but redemption would be given in educational vouchers or direct payments to a university for tuition, board and room, and other educational materials. Redemption of savings for purposes other than education would be at the usually lower normal banking savings rates.

Again, a compensatory system will have to be made available to justify the high interest rates paid for savings for educational purposes. This can be socially justified by the savings that will accrue later because of reduction of the number of future loans.

International Borrowing. Foreign capital is an important source of funds for SLI. Initiation of a student loan program has made it possible to obtain monies from international agencies. The question of using international loans should be judged by its convenience to the lender and borrower.

The Lender's Point of View

The reasons international agencies provide aid are complex. Political reasons will not be discussed here. Student loan projects are highly regarded in purely "developmental" terms.

These loans are generally granted at less than commercial interest rates, but they are attractive to international lenders because they represent an input for a strategic sector—education; in administrative terms, the size of the loan is manageable, for it ranges between one and five million dollars; and it adapts well to the "specific project approach," as well as to the more modern "sectoral approach."

There are at least three drawbacks in making loans to SLI. First, it is hard to shift the burden of a local currency devaluation onto the individual borrower because of equity; yet the SLI cannot alone assume the risk of depreciation of the exchange rate because a strong devaluation would impair its capital structure.

Second, the success of SLI rests mainly on the administrative capability of the organization, and there is insufficient administrative talent in developing countries.

Third, loans for a politically sensitive sector like higher education always involve a considerable political risk that influences future repayments.

The Borrower's Point of View

Economists have lately stopped saying a country should borrow abroad only for investments that yield exportable commodities, substitutes of imports, or for "self-liquidating" projects. They now advocate a more liberal view of borrowing on the basis of the "general" effect on the economy. But, while there is an advantage of having more money at the beginning, a loan also means the disadvantage of having a sizable amount less some years later because of interest and handling charges.

A country should carefully weigh the cost of external aid against the effects of an overall increase in productivity that will compensate for repaying the loan in the future. It is unsound to borrow for a specific project to solve a temporary difficulty in the balance of payments (although sometimes it is politically sound). Why borrow for an SLI in particular? Certainly, the import component of student loans does not seem to be high. A country may consider foreign loans for an SLI if they have advantages over local financing and if conditions are more favorable than for other alternative projects. Normally, the terms for the SLI project would be "softer" than similar loans for other projects.

In any event, when the decision is made to borrow abroad, there is no justification for placing the burden of servicing a foreign credit on the individual borrower. The reasons for using foreign credit do not pertain to the project itself, but to the economy at large. Neither can the burden of servicing be placed on the banking institution itself because, as already explained, this would hamper its financial capabilities and, hence, its social function. From the borrower's viewpoint, the burden of external servicing can only be placed upon the Central Bank or the Central Government.

Finally, the impact of technical assistance for SLI should not be neglected. The input of expertise and specialized knowledge is highly valuable because it can prevent many blunders and can help overcome resistances from private banking groups.

In general, national financing is preferable to the use of foreign funds. In the event of using foreign funds, external aid should not be used to substitute national effort, but only to complement it.

Foreign Grants One additional financing device may have a short-run use—foreign grants. They are useful for the initial capitalization of SLI, but cannot be relied upon for the institution's continuous functioning. SLI must function successfully with their own income and have their own structure and operations. No grant lasts forever. Also, the knowledge that outside help may rescue the institution may be detrimental to the efficiency of its operations.

The Special Fund A student loan development bank deals with far more complex social problems than other development banks. To enable it to operate with financial solvency might require an additional method of absorbing extra social risks. This instrument is the special fund.

The special fund reduces the impact of the extra welfare and social costs and introduces a clear distinction between costs of social welfare, and the costs of financial risk. Thus, it may help prevent distortions in the allocation of funds and in the operations of the SLI. This special fund can be underwritten by the government or by philanthropic institutions. Until an actuarial history is available, it is important to have flexibility in the level of resources for this fund, and financial policy must be reviewed at frequent intervals.

Concluding Remarks on Student Loan Development Banks

Once the principle of having an SLI is established, an institution must be found that can perform not only the tasks of a specialized lending agency, such as many existing SLI do, but also generate an ever-increasing amount of resources for new loans. Public tax resources are held in check by the competition of other public and private needs, identified through a variety of political processes. Resources available from donations are generally restricted by the willingness and ability of the wealthy patrons. It is only through the general credit system that an SLI has a chance of replenishing resources. It is better to finance SLI through the credit system so that the SLI need not rely solely on public budgets. The burden of the increase of credit is spread over the whole economy, sometimes through a general inflationary pressure. Thus, no more criticism should be put on higher education than is put on other sectors because all sectors of the economy that get preferential treatment in the credit market exert inflationary pressure.

CONCLUSIONS

National student loan institutions have become important because of increasing budgetary pressures on higher education. But these programs involve a sizable amount of initial financing. Consequently, they swell the higher education budget (or in the case of student loan development banks, they swell credit)—unless an equal increase of money is received by increasing tuition.

In relatively well-to-do countries, the budgetary increase is offset through government guarantee of loans granted by private banks, through semi-public agencies financed outside the government budget through sale of their own bonds, or through a semi-public agency to re-finance loans made by banks to students.

In developing countries, where there is a shortage of investment funds needed for economic development, political leaders cannot ignore the competing sectors in spite of the strong priority of education in the allocation of funds. They must look for measures to alleviate the strain on the budget. But the easy alternative of increasing tuition to raise funds for the loan program—at least for the first ten years until repayments of any size flow back—is not readily available in developing countries.

The ideological commitment to free education in most developing countries is strong and overshadows the broader goal of equal opportunity that requires added resources. No wonder governments are reluctant to increase tuition, even moderately, and content themselves with cautious plans—partial support of subsistence costs and minimal tuition charges.

It is also not possible to generalize about the outcome of any student loan plan because it may depend crucially on political circumstances—including how strong the students are as an organized political force. Where increases in tuition are possible (and under the best circumstances these increases must be gradual and slow), the creation of an SLI and, particularly, that of a student loan development bank can be an important factor in increasing resources for higher education in the long run, and in increasing the participation of disadvantaged social groups in higher education.

Where charging tuition is politically unfeasible but not coupled with a strong opposition to private higher education, student loan institutions can be directed at insuring the survival and growth of the private sector, while equalizing opportunities of access to higher education.

In general, SLI offer a developing country a flexible method for providing social equity in higher education, and for shifting part of the burdens of higher education from the general public to the student who is willing to risk by borrowing against increased future earning capacity. However, the achievements of SLI should be compared with other instruments that may accomplish the same policy objectives.

CHAPTER VII

The Financing of Occupational Training

VOCATIONAL education trains persons for agricultural, industrial or commercial occupations. Such education can be provided through a variety of learning processes. These range from "picking up" skills on the job to being trained in specially equipped shops by teachers using modern machinery and teaching methods.

Because vocational training can be so diverse, its financing varies considerably, depending on the type of training and the institution that offers it. This chapter provides a framework for classifying different types of training and reviews the financing of the most common types of programs: vocational schools, apprenticeship training, further training, retraining, and rural training.

Many countries have special national training institutions that are important in administering and financing different types of vocational education. These types of institutions are also described. The advantages and disadvantages of the payroll tax, the most common method for financing them, are analyzed. Suggestions are also presented for overcoming some of the disadvantages of the payroll tax.

DIFFICULTIES IN CATEGORIZING AND COMPARING TYPES OF VOCATIONAL TRAINING

Classifying vocational education is extremely difficult because no division of levels and forms exists that is both satisfactory and mutually exclusive.

Names for vocational education often indicate different kinds of institutions and student objectives. Some common names for vocational education are: vocational high school training, vocational retraining, adult vocational education, industrial education, technical education, terminal education, cooperative education, comprehensive education, occupational training or education, agricultural training, and commercial training.

Training has been traditionally provided by apprenticeship programs, vocational, technical, and comprehensive schools, or ad hoc institutions. But vocational and technical schools are becoming increasingly involved in courses that upgrade and retrain. On-the-job training sometimes includes part time study in educational institutions. Training can be administered by government, private enterprise, or unions.

ALTERNATIVE TYPES OF TRAINING

Vocational training can be offered through educational institutions, on-the-job training, and through a combination of both apprenticeship and cooperative programs.

Training in Educational Institutions The main characteristic here is that instruction occurs in a classroom environment and is completely structured. It is usually administered by public education authorities, although it is sometimes offered under the auspices of national training bodies or the Ministry of Labor. Private profit-making and non-profit institutions also provide this type of training.

The student is usually an elementary school graduate. After finishing a pre-determined curriculum and taking examinations, he receives a degree that attests to his knowledge and, sometimes, accredits him to further his education in higher institutions of learning.

On-The-Job Training (OJT) This involves a program of training, but usually lacks the pre-determined schedule of work assignments, the fixed duration, and the related course-work of an apprenticeship. But the program can range from structured training schedules to informal help arrangements where the trainee works under a trained worker's guidance. Related instruction is usually not required, but may be encouraged by the employer or another responsible authority.

Upgrading is another form of on-the-job training. The worker is transferred, usually to a harder job at higher grade levels. These transfers continue until he accumulates a broad experience in his occupation.

Apprenticeship This combines on-the-job training with classroom instruction. The on-the-job training follows pre-determined work assignments scheduled to give the apprentice broad experience in the trade's important aspects. The classroom instruction can be given on the job, or in privately or publicly operated schools. The apprenticeship period is fixed and is known in advance by the trainee. An employer or public authority, a worker's organization, or any combination of these may administer the program.

In some countries, only the apprenticeable craft occupations are included in training programs. In others, the range is much broader and includes office, sales, service, and semi-skilled manual work. The apprentice usually gets a certificate when he has completed the training and passed various tests of his technical knowledge and competency.

Cooperative Education Formal instruction in a particular trade, usually in a vocational or technical high school, is combined with employment in that trade. In-plant training ranges from the highly structured to the highly informal. School instruction includes subjects related to the trade, and academic subjects required for a diploma. Generally, the trainee is below the legal age for leaving school, and he receives a diploma when he completes the program. School personnel are responsible for placing the student and for overseeing his plant training.

The student may alternate between work and school on a weekly, monthly, or a semester basis. He may work part of the day and attend school the other part, or at night; or he may work one or more days a week and attend school the others. Such released-time ("sandwich instruction") takes a variety of forms. In block-released programs, the trainee attends school several consecutive days, up to an entire week. This arrangement is consistent with both apprenticeship and on-the-job training methods of vocational education. Normally, block-released time is part of the training for an individual older than the legal school-leaving age. The individual is mainly an employee, not a student. He is released from his job to attend related classes, which normally include only subjects related to the job.

TRAINEE DIFFERENCES AND OTHER VARIABLES

Theoretically, each of these training alternatives can be given to trainees who differ in age, education, employment status, income level, work experience, and physical and emotional health. Normally, apprenticeship is reserved for young workers just out of school, while OJT and upgrading are intended for a much wider age group.

Shorter retraining programs for older experienced workers with obsolete skills can be provided in an institutional setting. If a worker has been out of school for a long time, emphasis upon practical shop or work experience, instead of formal classroom studies, is appropriate.

Specially designed programs are also given to those with limited education, and with physical or other handicaps. The poorly educated might first receive basic education and an orientation to working before they receive specific occupational training. Likewise, special rehabilitation programs—perhaps, in shelter workshops—are held for the handicapped.

Types of trainees include not only youths, older workers and handicapped workers, but also workers in upgrading and retraining programs who may need special training.

Each training alternative can be classified by characteristics other than the kind of student. These characteristics help determine the training cost, the quality and practicality of the training, methods of financing it, and, possibly, the incidence of the costs. These characteristics include: the training site; administrative structure and responsibility for training; source of financing; the level, degree, and specificity of skill developed; the relatonship between formal courses and on-the-job learning; the amount of structure in the training process; and its duration and scheduling. The frequency with which elements of vocational education occur in modes of training is presented in Table 1 on pp. 124-126.

FINANCING OF VOCATIONAL EDUCATION

Such financing is very diverse and is generally influenced by the institution that provides or administers the training. (See Table 1.) The financing of vocational education usually involves three parties: government, employers, and trainees. The government provides vocational education through various institutional arrangements. Public training is always financed with fiscal resources. The revenues the public training agency uses may come from the central budget or from earmarked taxes.

Employers provide training either in courses at the plant or with on-the-job training. The employers contribute paid released-time, direct costs of training, and opportunity costs of men and machines. Privately provided training may also be assisted with public funds.

The trainee helps defray the training costs by earning wages lower than he would if he were not in an apprenticeship program, and by going to school on his own time.

Existing Financing Methods

The general patterns of financing occupational education by mode of training are presented in Table 1. The following section will give an overview of existing financing systems, with selected examples to point out general patterns and interesting variations. It will deal with vocational schools, apprenticeship programs, programs for further training, programs for retraining, and special rural training programs.

Financing of Vocational Schools Vocational schools may be equivalent to formal secondary educational systems, or they may be particular branches of educational structures, or sometimes completely independent subsystems.

Vocational schools should supply skilled workers. But because of their inability to deliver a finished product, vocational schools have become formal, pre-occupational systems. Most vocational schools are financed by the government. There are many interesting variations to be studied.

In the United States, the Federal Government provides the states with funds on a cost-sharing basis. It also provides money for research and evaluation of vocational training programs. Funds allotted to each state are proportional to its population in designated age groups and to its "allotment ratio." This "allotment ratio" depends on the state and national averages of the per capita income. This type of allotment formula does not take into account the manpower and training needs of the particular state, which is a weakness.

In Switzerland, vocational schools are financed by the cantons and the Federal Government, which pays from 30 to 50 per cent of the costs in inverse relation to the canton's economic potential.

In the Netherlands, the Central Government bears all costs of either private or public post-primary schools on a budget proposal basis. Dropout rates above certain limits may cause the loss of public support for schools in such a program.

In Sweden, vocational schools are part of the secondary comprehensive system and are publicly financed. Students at vocational schools get no financial support. Only when they are in post-secondary vocational schools do they receive support.

In East Germany, the government not only finances instruction but also provides lodging, personal allowances, and practical training in enterprises. Sometimes businesses provide practical training and personal allowances to students. In other cases, instruction is financed by income from the student's production on the job.

In Bulgaria, training for production is being provided in schools by engineers, technicians, and skilled workers, supplied and paid by the enterprise through special arrangements with the school. One-third of the income from student production goes to students, and one-half to improve school facilities and equipment.

In Hungary, students get an allowance based on the occupation entered and on personal performance. The allowance is higher for those apprenticed in jobs that demand more technical skills, and for outstanding performance.

In Thailand, public trade schools, commercial and industrial secondary schools, and agricultural schools are financed by the Central Government. But privately financed training in vocational schools is also significant representing 27 per cent of the total vocational school enrollment. Similarly, in Finland, more than 40 vocational schools run by industry are operating successfully.

Financing of Apprenticeship Training Programs *Formal* apprenticeship training programs usually bind employers and trainees to legal regulations, either within the Labor Code or through special apprenticeship acts. These regulations establish:

—the wage scale during apprenticeship

—the length of apprenticeship and subsequent indenture

—fringe benefits—board and room, released time to study

—fees paid by the trainee.

In the Cameroons, the employer must pay an apprentice on an upward sliding scale. The trainee gets at least one-third of the minimum wage after the first semester, half of it after the first year, and the minimum wage after two years. Room and board may also be provided by the employer, who may deduct these costs from the trainee's allowance up to 50 per cent of the legal allowance. The employer may be guaranteed that the apprentice either continue in his service for two years or pay an indemnity.

Similar arrangements exist in Zaire, Gabon, Rwanda, Algeria, Mauritius, Ceylon, India, and Australia. All of these programs place part of the financial burden on the trainee himself, in the form of lower wages and long indenture.

If this burden becomes too heavy, the dropout rate from apprenticeship increases. In Italy, apprenticeship regulations are most advantageous to employers. They try to extend the apprenticeship as long as possible. The result has been a high dropout rate—often as high as 60 per cent.

The payment of fees by the trainee is infrequent today, but the custom of paying a premium to the employer in exchange for training is still practiced in Kenya. It was recently abolished in New Guinea and Papua.

In the Fiji Islands, free time for theoretical training is compulsory. The employer must arrange for large blocks of released time. The programs in the Cameroons, and other countries mentioned that have similar arrangements, also entitle apprentices to free time for attending theoretical courses or even for participating in literacy courses.

Government participation in apprenticeship training is usually more than that of a monitoring agency because the government shares in the financing. In the simplest systems, as in the Fiji Islands, the government forms trade advisory panels. These guide business enterprises on training matters and also provide job training guides for specific trade apprenticeships. An Apprenticeship Council, created and supported by the Central Government, is made up of representatives of employers, trade unions, and government officials. The Council administers a tool allowance scheme and reimburses employers for the transportation costs of apprentices attending block-release courses.

In the more comprehensive systems of financing, the government finances apprenticeship programs and other out-of-school training through earmarked taxes such as the payroll tax, the turnover tax, or a per worker tax.

The degree of government cost-sharing depends on whether theoretical courses are developed on an institutional basis, or whether the government compensates a private enterprise for expenses incurred. This compensation can be made through deductions from the apprenticeship tax, or through direct reimbursements by the levy board to undertakings excluded from the levy system, as in France.

Many governments finance the theoretical part of apprenticeship programs by paying for enrollment in vocational schools and correspondence courses. East Germany pays for special training schools and for the lodging of apprentices. Students in these basic training schools—regulated separately from vocational and technical schools—may also receive a maintenance and training allowance, with a familial supplement if necessary. The decision on allowances is made by local committees, and the funds are provided by the particular district.

In Denmark, both industrial associations and the Central Government finance schools. These schools provide one to two years of basic theoretical training. This reduces the financial burden of small-scale enterprises. They do not have to pay students wages during the pre-vocational period or during a non-productive period. The on-the-job training period is also considerably shortened.

Occupational education training in Finland has taken a different approach since 1967. Training is provided by employers on a voluntary basis and the Central Government pays for theoretical instruction, a subsistence allowance for apprentices, and for books and other training aids through a standard refund for all trainee expenses. Guidance and aid services are still provided by public authorities. This approach has improved the overall system. The new system requires increased amounts of public funds, but the anticipated reduction of money needed by vocational schools will most likely produce an overall savings.

Financing of Further Training Programs Several countries have recently recognized that workers must upgrade and update their knowledge and further their skills beyond the initial apprenticeship training programs, detailed in the four preceding sections. By definition, such further education and training is intended for large sectors of the population. Training methods involve large-scale operations and low unit costs, such as correspondence, television, and part-time courses.

Financial arrangements and legal provisions for further training have been generally flexible, cautious, and very open—possibly due to insufficient experience. Central Government subsidies are generally available, but heavy financial involvement tends to be avoided. Employers may receive financial assistance from the Central Government towards costs of training and wages of the trainee. The individual also contributes with his opportunity costs—either in time and effort, or by getting a lower salary during part-time training or during a leave of absence.

In France, "further training" programs involve a much deeper commitment to study for a very limited number of workers. Those with more than three years' seniority may take a leave of absence up to a year for full-time study, or 1,200 hours off the job for part-time study to improve and update job skills. No more than two per cent of an enterprise's total payroll—if it has more than 100 workers—is allowed such a leave. For enterprises with fewer workers, the time limit is two per cent of the total number of hours worked.

In Norway, professional associations sometimes finance upgrading and retraining outside the university system. Although existing educational institutions cooperate, the program is essentially a private one. Vocational and technical schools, financed by the Central Government, have also participated in programs for retraining and further training.

Rumania provides further training in an act enabling any enterprise—socialist organization, public body, or private undertaking—to offer training. Both part- and full-time, this training covers all levels of workers, from production to management, and all sectors, from public services to production. The Ministry of Labor is responsible for coordinating and supervising the length, form, and content of the courses. It also determines the kind of financing arrangements.

Yugoslavia established a permanent system for further education that places the entire responsibility and financial burden on workers and enterprises. Training costs are covered by a tax on income. Training is no longer a state service but a responsibility of all those involved. Such training is essentially community-managed.

In the Soviet Union, compulsory provisions for further training have recently been made. Workers who did not attend vocational schools receive special attention. The upgrading courses have three stages, each leading to a higher skill category. Financing is determined by the appropriate ministry for a particular enterprise within an industry.

In Poland, 3.5 million workers were annually enrolled in correspondence and evening courses by the end of the 1960's. These courses were financed by the Central Government through the ministries of each economic sector, by central cooperative organizations, by worker-student fee payments, or by enterprises paying for their own workers. It has also become common for the enterprises to provide practical training concurrent with correspondence courses. In 1961, out of 40 million Chinese industrial workers, some 25 million were enrolled in spare-time educational courses. The televised University of Peking (which had 35,000 students in 1961) has had encouraging results.

The Ivory Coast recently established an initial and further training committee—without an independent budget. The committee's members provide needed funds from the institutions they represent. In Latin America, the task of further training is sponsored mainly by the same agencies that provide basic training, and the sources of funds are, therefore, those of these institutions.

The Financing of Retraining Programs Retraining deals with the unemployed adult, with training those whose jobs are threatened (as in collective lay-offs), and with "accelerated training"—intended to correct certain imperfections in the labor market and to make changing trades easier.

Provisions for retraining exist primarily in countries with advanced social legislation. Most trainees in these countries are unemployed and the governments must generally finance the trainees' maintenance and the institutions' costs. Some enterprises have voluntarily met these costs, especially where collective lay-offs were caused by automation, use of new technologies, or shrinking markets.

In Austria, the Federal Government makes grants available for trainees' monthly allowances, and also to employers to cover up to 50 per cent of their direct and indirect costs. Interestingly, employers who do not profit from the retraining receive full reimbursement for the costs of retraining.

In West Germany, the costs of retraining are shared by the Federal Government and the Lander States—a similar arrangement exists in Switzerland between the Government and the cantons. West German persons under 30 years of age receive living and training expenses. Besides standard minimums, they can obtain interest-free loans, repayable three years after the completion of their training.

In East Germany, either the Central Government or the enterprise finances vocational retraining. If the enterprise finances the training, the Central Government pays for teacher salaries and student lodgings. Trainees receive allowances and familial stipends, even during the initial training.

In Russia, when automation, mechanization, or higher productivity puts workers out of jobs, the standard regulations provide for mandatory retraining in new occupations. This type of training is financed by the ministries of the participating sectors.

Many developing countries have recently begun to combat unemployment through retraining and training programs. In Upper Volta, Gabon, Iraq, Ceylon, and Colombia, agencies and centers are providing vocational training. In Brazil, the courses of accelerated training are financed by the Federal Government.

The Financing of Special Rural Training Programs The training of farmers and rural craftsmen involves different financing problems. Taxes on agriculture are generally difficult to administer and cannot be counted on to provide resources. Also, it is difficult to find employers or patrons to provide training programs, as in the industrial and commercial sectors. For these reasons, most rural training is financed by government and self-supporting activities.

In Spain and Italy—where rural population still represents one-third of the total population, and where rural products are still an important part of exports—the need for training programs and facilities has been recognized. There are proposals for training young persons in rural areas (whereever they happen to live) which recommend using mobile units, the costs of which are to be financed by the Central Government. Special government financed apprenticeship programs have also been proposed, involving agricultural enterprises and the active cooperation of several other agencies, that provide teaching staff and equipment.

Switzerland has also outlined a new policy for vocational training in agriculture, based on one to two years of apprenticeship and, at least, two subsequent terms at an agricultural school.

In Poland, three levels of agricultural schools were established. Basic schools providing two or three years of post-primary training were not very successful. There has been an increasing emphasis on post-secondary schools to provide skilled staff for state agricultural enterprises or rural cooperatives. In addition to paying training costs, these schools offer board to some of their students. Since 1960, several agricultural colleges have been established to train agricultural technicians and to offer correspondence courses for rural adults. Practical instruction on dealing with suppliers, customers, and local agricultural authorities are stressed. The colleges appear to be partially self-supporting.

In recent years, many African countries have created centers—financed by the Ministry of Labor (Central Government)—for the accelerated training of rural artisans—mainly masons, blacksmiths, weavers, and carpenters. Trainees get a monthly allowance, and money to purchase a basic set of tools and materials.

Such a program has been initiated in Upper Volta. Senegal recently established a committee for rural training. This committee studies the special problems posed by rural vocational training, carries out research, finds solutions to agricultural training problems, and coordinates policy objectives among different agencies. This committee's activities are financed from the budget of the Central Government.

SPECIAL NATIONAL TRAINING INSTITUTIONS AND THEIR FINANCING

As mentioned earlier, the financing of occupational education is related to the type of institution administering the training programs. Many countries have special national training institutions that are important in administering and financing different types of vocational education. These institutions share common characteristics.

They compete with both the formal educational systems and the training offered by the enterprises that have training programs. These ad hoc training institutions may be the country's only vocational training body; they may co-exist with vocational, technical, and comprehensive schools; or they may even co-exist with apprenticeship programs. Generally, these ad hoc institutions are financially strong. Their most common source of income is the payroll tax, also called the training levy. Most of the institutions financed by a payroll tax tend to provide the training themselves. Many of these ad hoc institutions have the legal power to force enterprises to provide and to participate in the financing of vocational training.

These ad hoc training institutions can be autonomous public agencies or national private agencies that are created by law or decree. They can also be established as central boards or committees responsible for training instructors, researching vocational training, and distributing funds for training.

The organizational structure of these ad hoc training institutions varies. In large countries, the institution may follow regional divisions. When the industrial sector is well-developed, the institution may follow the pattern of industrial sectors. The United Arab Republic has committees for both regional and industrial activity.

In Dahomey and Gabon, a national labor council compels public and private enterprises to provide and pay for vocational training. In Iraq, the Ministry of Labor may compel employers with more than 50 workers to support training in an ad hoc vocational institution.

India has central training institutes and industrial training institutes in different regions. These serve smaller enterprises, which bear the cost equally with the government. Employers with more than 500 workers are required to provide and finance the training themselves.

Most Latin American countries have ad hoc training institutions financed directly from the national budget or through a payroll tax. In Brazil, SENAI (National Service of Industrial Apprenticeship), a private autonomous agency, is financed by a payroll tax. SENA (National Apprenticeship Service) in Colombia is a public autonomous agency. CENDAP (Centro Nacional de Desarrollo, Adiestramiento y Productividad) in Guatemala is a semi-autonomous agency, financed by both government and contributions of private industry, not by a payroll tax.

The Payroll Tax Method of Financing Vocational Education

This method has been extensively recommended by vocational education specialists and international organizations such as the ILO. It is being adopted increasingly throughout the developing countries of the world. The effects of payroll tax financing on operating vocational training systems, and on employment and economic efficiency are significant and should be analyzed.

The Payroll Tax as an Earmarked Tax Technically, a payroll tax is an earmarked indirect revenue tax. Earmarked payroll taxes are convenient because they assure revenue and are easy to collect. The history of educational finance also shows the introduction of many innovations and improvements in connection with the use of earmarked funds. But earmarked taxes for education have been criticized for introducing both rigidity in government decisions, and obstacles in planning.

Developing countries have an added objection to the payroll tax. The wage-earning sector is usually the economy's fastest growing sector. A fixed levy on this sector means that resources for vocational education also would grow faster than those of the rest of the economy. If funds are only spent on the particular sector that is being taxed, as they usually are, there is a tendency to waste resources, just because they are available. If the industrial sector payroll grows at eight per cent yearly, while employment in that sector increases by only four per cent, and training is confined to industrial training, available training resources will grow at eight per cent, and available trainees will increase by only four per cent. Because the money available per trainee grows constantly, it leads to such inefficiencies as perpetuating useless courses, higher overhead costs, and higher capital costs.

The effects of some of these inefficiencies can be overcome if the earmarked features of the tax are mitigated to allow expenditures, not only for vocational education in the same sector, but also in other sectors. Funds collected in the industrial sector could well be used to provide vocational education in agriculture. Periodic revisions in the tax rate are most necessary to insure that the rate is not unduly high. An earmarked tax is only useful in providing a "safety net" for funding; it should not produce a continuous windfall of funds.

Bad Effects of the Payroll Tax A major objection to using the payroll tax to finance training is the adverse effect it has on unemployment in developing countries. One of the major obstacles to job creation in developing countries is the persistent use of technology that does not correspond to the availability of a country's resources. This difficulty arises from the artificial distortion of the relative costs of capital (machinery) and labor. Many factors cause distortion: preferred exchange rates that cheapen the import of machinery; social benefits and policies, including minimum wage legislation, that push up the cost of labor; and high tariffs imposed to protect import-substituting industries that are mostly more capital-intensive. All these factors influence management to substitute labor with machinery, thus increasing unemployment.

And the payroll tax exacerbates this problem. It raises the price of labor and induces management to substitute machinery for labor. This drawback could be improved if the tax-base were broadened to include capital. The tax would then become a value-added tax (VAT) on the particular industry. Special duties for training can also be imposed on imported machinery. This is appropriate since training is designed to use such capital and can be considered part of it.

A more progressive view, and one that would create more jobs, would fix different rates for capital and labor, taxing capital more heavily than labor.

The Impact of the Payroll Tax on Small Industries The modern sector that is heavily capitalized can more readily adapt to changing costs of capital and labor. Small factories are hampered because of lack of capital or flexibility to choose methods of production. In many countries, the payroll tax excludes enterprises with ten workers or less. But this cut-off level may be inadequate, since it may include only a fraction of small industry.

The payroll tax penalizes small- and medium-sized enterprises that utilize overtime payments because they cannot arrange for different factory shifts as easily as large firms do. Taxing overtime labor costs provides an incentive to mechanize, which contributes to unemployment.

Small industries also are penalized because they cannot provide on-the-job training. Most countries allow firms to deduct training expenses from the accrued payroll tax. This system discriminates against small enterprises because they do not employ enough trainees to have even minimum-sized classes for needed training courses. Larger firms, on the other hand, can organize full courses for many different skills, including the upgrading of management.

Tax deductions for training costs benefit those firms that would have been training their own personnel, in any case; especially when the training is for jobs that are specific to an industry, or where the industry is operating in a monopsonistic labor market (i.e., where the industry is the only employer in the area).

There are two basic corrective measures. One is application of a VAT with a graduated rate based on a firm's size. Smaller firms would be taxed proportionally less, which would solve the inequity of the tax burden between small and large firms. Alternatively, small firms can be organized into "training cooperatives" to achieve economies of scale of training and greater efficiency. But this type of cooperative effort requires strong government-support with finance and administrative resources.

SUMMARY

Vocational education involves many types of occupational training that are difficult to define precisely. The type of training varies according to site, administration, curricula, type of student, methods of teaching, and so on.

Financing these types of training is also varied. In spite of many variations, recognizable patterns of financing vocational schools, apprenticeship, retraining programs, etc. exist. This is so because nations tend to imitate each other's systems. Also, the experts of international organizations have strongly urged adoption of similar financing systems in developing countries. The adoption of special national training institutions and the payroll tax for their financing is a typical example.

If vocational training institutions and the methods of financing them are to function efficiently, they must adapt to the structure of the existing educational system and to local economic conditions. Each country should attempt to develop its own institutions to fulfill these requirements, by considering carefully the implications of different arrangements for financing.

TABLE 1

Frequency with Which Elements of Vocational Education Occur in Different Modes of Training

F: very frequent
O: occasionally
—: seldom or never

CHARACTERISTICS	MODE OF TRAINING				
		Non-Institutional	*Combinations*		
	Institutional	*OJT*	*Apprenticeship*	*Coop. Ed*	*OJT plus Institutional*
Types of Trainees					
Youth	F	F	F	F	F
Handicapped	O	F	—	—	O
Persons in Retraining	O	F	—	O	F
Persons in Upgrading	O	F	—	—	F
Older Workers	O	F	—	—	O
Place of Instruction					
Plant					
Production Area	—	F	F	F	F
Vestibule	—	O	O	O	O
School	—	—	O	O	F
School					
General Secondary	O	—	—	—	O
Special (Vocational)	F	—	O	F	F
Skill Centers	O	—	O	O	O
Mobile Units	O	—	—	—	—

CHARACTERISTICS	MODE OF TRAINING				
		Non-Institutional	Combinations		
	Institutional	*OJT*	*Apprenticeship*	*Coop Ed.*	*OJT plus Institutional*
Home					
TV-Radio	O	—	—	—	—
Correspondence	O	—	—	—	—
Other					
Military	O	O	—	—	O
Prisons	O	O	—	—	O
Administrative Responsibility					
Public School System	F	—	—	F	O
Enterprise	—	F	F	F	F
Group of Enterprises	—	O	O	O	O
Unions	—	O	O	—	O
Ministries					
Education	O	—	—	O	O
Labor, other	O	O	O	O	O
National Institutions of Training	O	O	O	O	O
Private Educational Institutions for Vocational Education	O	O	—	O	O
Financial					
Public	F	—	O	F	O
Private	—	F	F	—	F
Semi-Public	O	O	O	O	O
Student Fees	—	—	—	—	—
International	O	—	—	—	—
Importance of Student Characteristics					
Age	F	—	O	F	—
Formal Level of Education	F	O	O	F	O
Employment Status	F	F	F	F	F
Income Status	—	—	—	—	—
Former Occupation	—	O	—	—	O
Relationship to Administrative or Financial Agency	O	F	—	F	F

CHARACTERISTICS	MODE OF TRAINING				
			Combinations		
	Institutional	*Non-Institutional OJT*	*Apprenticeship*	*Coop. Ed.*	*OJT plus Institutional*
Type of Job					
General Training	O	O	O	O	O
Specific Training	F	F	F	F	F
Training for Port of Entry	O	F	—	O	O
Semi-Skilled	O	F	O	F	F
Type of Courses					
General	F	—	O	O	O
Related	F	O	F	F	F
Theoretical	F	—	O	F	O
Practical	F	O	F	F	F
Method of Training					
Structured	F	O	O	F	O
Semi-Structured	—	O	O	O	O
Unstructured	—	O	—	O	O
Duration of Training					
Short Term	O	O	O	F	O
Long Term	F	F	O	O	O
Open-Ended	—	F	—	O	F
Time					
Full Time	F	F	F	F	F
Part Time	—	O	—	—	O
During Working Hours	—	F	F	F	F
Outside Working Hours	—	—	—	—	O
Alternate Periods	—	—	—	F	—

CHAPTER VIII

Recurrent Education

USING education to achieve equality has been a powerful and persisting idea. Many countries have tried various strategies to improve education's effectiveness. One approach stresses the equalization of resources, another stresses curriculum efforts. But all these strategies work within educational structures that prepare youth for the adult world.

Only recently have some questioned this approach, asserting that youth should not monopolize educational opportunities for improving society. This new philosophy calls for a new way of relating an individual's life to the educational system. In turn, this leads to a strategy that changes the basic educational structure, rather than one that merely tries to patch up deficiencies. This strategy is called recurrent education—making educational opportunities available throughout an individual's life.

This chapter will describe how a recurrent educational system might work; the changes necessary to implement a recurrent educational system; specific ways to finance such a system; and the feasibility of introducing recurrent education in developing countries.

A RECURRENT EDUCATION SYSTEM

In a recurrent educational system, educational opportunities are available throughout an individual's life. This eliminates the necessity of squeezing education into the early years of life.

Such a system should be differentiated from adult education programs and occupational training programs of many countries which are informal, part time, or concurrent with employment, and which usually involve specific training or remedial work. A recurrent educational system is full time and provides access to still further education. It attempts to combine formal and non-formal education into one complementary system. In addition, it integrates the two worlds of school or university and work in order to bring aspirations in line with economic and social realities.

Recurrent education need not conflict with the concept of compulsory education. A system could combine both types of education. An individual would receive 16 "educational tickets," ten of which are to be spent for compulsory education between the ages of six and 16. The remaining six, each representing a year's tuition, might be used at any time in a person's life. The curriculum could be arranged in units of study. If the student has been away from school for many years, he may first need refresher courses. Units of study would allow for flexibility of interest and rate of learning. A certain number of units would qualify him for a higher level of instruction.

Recurrent Education's Remedial Effects

Recurrent education may be an effective way to remedy the harmful effects of existing educational systems upon an individual, his society, and the goal of equal opportunities.

Correcting Harmful Effects on Individuals Children from poor families now enter the educational system disadvantaged. Their poor language and reading abilities and other handicaps result in lower levels of achievement and motivation. The influence of the home—often stronger than individual desire for education—if negative, can cause low motivation. But in a recurrent education system, only those with high motivation participate—the system is not compulsory and an individual may leave at will. He may also have a "second chance" for an education later in life. If he failed in school as a youth, all avenues for success are not closed.

Recurrent education has a broader motivational effect. It frees education from an occupational orientation. Learning may be pursued for learning's sake during leisure time.

In addition, recurrent education would be highly beneficial to women wishing to further their education or enter the labor market after raising their children. This opportunity is denied a large number of women in present systems of many countries.

Correcting Harmful Effects on the Society The present system also causes occupational problems. Education is supposed to provide entrance into the labor market. But in many countries, there is insufficient knowledge of the nature and amount of education needed for various occupations, or of changes in demand for occupations.

A recurrent educational system would insure more effective interaction between education and the socio-economic sector than now exists. It would allow people to change their occupations more easily during their lifetime and would give more specific information on a society's occupational needs.

Correcting Harmful Effects on the Goal of Equal Social Opportunities At present, there is considerable social selection below the university level. This favors the upper class and the growing middle class, without offering other avenues for social participation to the lower classes. A split and unequal society results.

Recurrent education offers increasing social equity because education is available throughout an individual's lifetime. In addition, recurrent education will help equalize the value of human activities, will better the relations between the generations, and will give different social groups increasingly similar experiences. More generally, a recurrent educational system can reduce a growing irrelevancy of the educational system to other sectors of human activity, so that the values and standards of all activities will be more harmonious.

IMPLEMENTING RECURRENT EDUCATION

A recurrent educational system has not yet been tried in any country. Its advantages are only theoretical. Moreover, it is not a panacea for all deficiencies of either present educational systems or social structures. In addition, other societal structures would have to change to accommodate recurrent education. This raises some concerns about implementing recurrent education. Implementing recurrent education involves changes in two areas: existing production systems and existing educational structures.

Changes in Existing Production Systems The most significant changes would occur outside the educational sphere. Industrial work schedules would have to be more flexible so individuals could take leaves of absence for full-time study. It would also be essential to insure that after a period in the educational system, employment would be available. Being a student would again have to be considered a respectable pursuit.

Changes in Existing Educational Systems If recurrent education means education after the basic compulsory level, changes in that part of the educational system will affect secondary and higher education in particular.

Several changes might take place on the secondary level. Recurrent education would probably tend to make the first part of secondary education comprehensive and possibly standardized. Upper secondary education beyond the compulsory level could become part of the recurrent system. Occupational skills could then be learned without the stigma of being "tracked" at an early age. Recurrent education could also reduce the number of secondary trade schools which are often unresponsive to current needs of the labor market. Occupational skill courses could be a part of the normal curricula offered in a recurrent educational system.

There would also be effects on existing higher education structures. Most likely, recurrent education could relieve some of the pressures for providing mass higher education without diminishing opportunities for obtaining it. Recurrent education would also probably increase access to higher education. Individuals will become more inclined to using the educational opportunities open to them later on in life. Existing adult education programs could be easily integrated into a recurrent educational system as particular educational units.

FINANCING RECURRENT EDUCATION

Because financial resources are always scarce, the availability of funds for recurrent education becomes a crucial area of concern. Recurrent education can be financed in four ways: from public funds, private enterprise, participant payment, and special funds.

Public Funds Funds from the public sector are already devoted to education. Some could be diverted to recurrent education but additional funds would still have to be raised. This would raise taxes, and there is the problem of who should pay these taxes. Probably the burden will fall on individuals in lower and medium income brackets. Even if private enterprise is taxed, it can easily shift the tax onto the consumer through price increases. The capital market might provide financing, but the interest the government must pay ultimately comes from taxpayers. Such a system would help financiers more than is necessary. There is still another problem. The way the government spends funds for recurrent education through grants, loans, stipends, or vouchers could either fulfill or hinder political intentions—and could benefit some participants but harm others.

Private Enterprise The willingness of private enterprise to invest in recurrent education will depend on the goals and content of the educational system and the amount of eventual profit. Private enterprise will invest in a program if the results will be beneficial to them.

This might cause private enterprise to favor recurrent education programs with practical orientations. Further, their investments would probably not involve programs for slower learners. Such private investments should be carefully scrutinized by public authorities. Control over investments on the part of private enterprise is only natural but may be detrimental to a recurrent educational system. If private investment is the sole source of financing for recurrent education, it may come to be more an elaborate system of occupational training than a new system of general education.

Participant Payments If the other methods of finance are used, the participants already pay indirectly through taxes or cost-shifting by industry. Some assert that if the individual benefits most from educational programs, perhaps he should finance them directly. But those people likely to benefit most from recurrent education may not be willing or able to pay. In general, the participant will probably be more unwilling to pay, the less relevant the contents and aims of the educational program offered.

There are additional aspects to participant financing. These involve opportunity costs of earnings foregone while participating in recurrent education. Also, there are problems of a person's financial responsibility for the support of his family and for his contractual obligations while participating in recurrent education.

Special Funds There has been a suggestion that combines the positive features of the above three sources of finance and, at the same time, separates the control of the recurrent educational system from these sources of funds. This proposal suggests the pooling of resources from public and private enterprise into a fund. Money presently used for post-secondary education could constitute the initial base of funds to be collected. This financing plan is particularly possible where private enterprises make increasing contributions to education. Moreover, policy decisions could be separated more easily from the interests of donors, and participants might be granted decision rights, even if they do not make any financial contributions.

FEASIBILITY OF RECURRENT EDUCATION FOR DEVELOPING COUNTRIES

Recurrent education may provide an alternative for developing countries wishing to change their present educational systems. But implementing recurrent education can present several problems that must be carefully considered. First, it requires several major changes in both existing production and educational systems that will probably be difficult to achieve. Second, a recurrent educational system would require a large amount of funds from a public finance system already burdened. Third, there are many planning problems. In the initial years of such a system, it would be difficult to plan curricula because of the difficulty in estimating potential "users." Because of the required curricular diversity and variation resulting from user demand, specialized teachers, texts, and equipment would raise the costs of education significantly. Fourth, cities offering recurrent education reinforce the already strong rural-urban migration.

Because implementing a recurrent educational system requires such a marked departure from existing educational systems, recurrent education appears practical only if it is introduced gradually into a country which already has a firm foundation of adequate basic education and sound financing. Unfortunately, these conditions are seldom found in developing countries.

CHAPTER IX

Financing Educational Broadcasting

THE use of radio and television for education is increasing in most countries. Consequently, techniques for financing such broadcasting are receiving considerable attention among educators and government officials. These techniques are numerous. This chapter presents only those techniques which are linked specifically to the broadcasting industry. Financing educational broadcasting from general budgets does not differ from the financing of any other educational expenditure through the general budget. Nor does private financing of broadcasting through donations and gifts differ from private financing of any other educational project. The alternatives presented in this chapter are evaluated against criteria helpful in deciding which financing method is best for a particular country. Some of the methods presented here will be beyond the needs of developing countries. But it is useful to see the wide range of possibilities when deciding on a financing alternative.

CRITERIA AND FORMS OF FINANCING

There are four basic criteria with which to evaluate financing of educational broadcasting: the adequacy of funds, their stability and growth potential, their neutrality in the economy, and payments and benefits. The first three criteria were discussed in Chapter III. The fourth, payments and benefits, refers to the connection between those who pay for a service and those who benefit from it. This criterion is of particular relevance to financing educational broadcasting. Controlling the reception of programs is much more difficult in educational broadcasting than with any other form of education because of the potential availability for everyone to own or have access to a radio or television set. On the other hand, all society's members may pay, but not all may benefit. Financial techniques of educational broadcasting must, therefore, be justified differently from those most commonly used in educational financing.

The financing techniques that are either in use or have been suggested by planners fall into two basic categories: non-governmental and governmental. Logically, any combination between or within categories is possible. Some alternatives in each category are:

Non-Governmental Financing:

- —Subscription
- —Controlled advertising
- —Support from a non-profit satellite service which transmits programs and collects fees from its other services.

Governmental Financing:

- —Annual license fees paid by owners of receiving sets
- —Excise tax on the sale price of a receiver set
- —Tax on gross receipts of either commercial broadcasters or of all long-distance communication systems
- —A fee for the use of the broadcasting channel
- —Tax on commercial advertising carried by broadcasters
- —Excess profits tax applied to commercial stations.

Alternatives of Non-Governmental Financing for Educational Broadcasting

Subscription Individuals pay a set price to receive a given amount of programming. He may either pay for specific programs or for access to all programs on a channel. In television, it has been commonly called "pay-TV." If a person does not pay, he cannot tune in to programs.

This plan for financing educational broadcasting has several implications in relation to the four basic criteria used to evaluate the financing of educational broadcasting. An adequate financial yield depends not only on the number of subscribers but also on the rate charged for the service. It is not easy to determine the maximum that may be charged without losing subscribers. Because an educational station obviously depends on such revenues, this plan does not give it the ready capital needed for flexibility or innovation.

This problem of adequate funds leads to the second criterion, stability versus growth. Subscriptions may produce fairly stable income, but growth may be slow and difficult. Growth can only be achieved through more subscription or higher rates which, in turn, may cause a loss of subscribers.

This financial plan is not neutral in its effects on economic behavior, and it tends to be regressive. Because people must pay for programs, they must choose between entertainment and educational opportunities. Low-income people will find such a subscription fee more burdensome than wealthier people.

This leads to the fourth criterion—the nature of the connection between those who pay for the service and those who benefit from it. Subscribing to educational broadcasting directly links the two. But because the programs would be directed to those who pay, the range of potential beneficiaries is severely limited.

Controlled Advertising Under this plan, the station would sell commercial advertising but retain control over its content and use, to prevent its interference with educational programs. Such a plan would probably not produce enough money to fully finance a broadcasting station. It could produce supplemental funds, but such funds are neither very stable nor easily increased since advertisers may change to other media, especially when conflicts between program and sponsor philosophies arise.

In the controlled advertising schema, the link between those who pay for the programming and those who benefit from the programs is indirect. Companies who pay receive the benefit of advertising their merchandise. These companies do not directly benefit from the educational programs which result from the use of their money. The program listeners benefit by exposure to educational programs. Yet they also pay for the broadcasting indirectly through commodity price increases due to advertising.

Non-Profit Corporation Satellite Transmission This financing alternative has been suggested by the Ford Foundation and others. Basically, commercial stations pay a non-profit corporation for use of the satellite. The profits are then used to support educational broadcasting. The Ford Foundation suggests that the sums collected could be significant, although not necessarily enough to completely support a large educational network.

A non-profit corporation would provide a fairly stable source of income, but it would have slow growth potential, especially since expensive fees might cause the development of competitive modes of transmission. Its effects on economic behavior are fairly neutral. Once again the connection between benefits and payments is indirect. Commercial stations receive satisfactory satellite service for their payments which is one direct connection of costs and benefits, but it is the public who receives the direct benefits from the educational programs which are paid for by profits from the satellite service.

Such a financing proposal has limited use for most developing countries unless several nations were to share one satellite facility. It has some possibility for financing international educational programs and international information and retrieval systems.

Alternatives of Governmental Financing for Educational Broadcasting

Annual License Fees This is a plan of payment by owners of receiver sets similar to the subscribing plan, except that the money goes directly to the government rather than to the educational broadcasting system. The money may or may not go into an earmarked government account. The advantages and disadvantages here are basically the same as those described under the subscription plan. Annual licensing also involves the practical and administrative problems of collection and enforcement, as well as difficulties of political and public acceptability.

Excise Tax on the Sale Price of the Receiver Sets Sold This tax could be levied at the manufacturing and importing levels. It appears fairly simple to administer. The adequacy of yield depends on the rate of taxation, on the stage of growth of the broadcasting system, and on the volume of sales. Market fluctuations strongly influence stability and growth potentials. Technological advances in broadcasting receivers increase sales and revenues due to higher priced sets. When sales level off, revenue falls correspondingly.

The excise tax's effect is not neutral because it is almost always totally shifted onto the consumer. If it increases costs of broadcasting relative to costs of other media of entertainment or communication, this could restrict consumer preferences. The resulting level of the tax's regressivity appears slight to some planners because the wealthy buy more broadcasting receivers more often and buy more expensive models than the poor. But this logic is questionable. In some countries, poor people do buy television and radio sets on time payments more often than their means allow. This makes the tax regressive. But if the poor may benefit more from educational broadcasting than the rich, this lessens the tax's regressivity.

Tax on Gross Receipts of Either Commercial Broadcasters or of Long-Distance Communication Systems In this tax, the adequacy of yield again depends on the tax rate. Potentially this tax will produce an adequate yield. Such a tax-base is stable. The long-distance communication systems are often monopolies or near monopolies, and broadcasting networks are generally quite stable. Such a tax-base may also increase revenue as taxed gross receipts increase.

But such a tax is not very neutral in its potential impact upon an economy. In many countries, taxes on already heavily taxed monopolies may discourage private communication systems from further investments. It is also possible that much of these taxes would indirectly be passed on to consumers through higher retail prices of products advertised in the broadcasting media. Whether such increases are consequential is debatable.

The connection between those who pay and those who benefit is indirect: the commercial broadcasters pay; society benefits. Some planners rationalize this financing plan by asserting that it is the social responsibility of the commercial networks to sustain educational broadcasting because they indirectly benefit from a better educated populace. Also, because broadcasters are given a monopoly on a resource by the government, the government is therefore entitled to tax that monopoly for national purposes.

A Fee for the Use of the Broadcasting Wave-Length or Channel Some planners also use the monopoly argument to justify taxing the use of wave lengths. Such a tax alone may not adequately finance an educational broadcasting system unless the costs of running such a system are very low. But it is a good supplemental source of income. A charge for using an assigned frequency does produce a good stable yield; but revenue growth could come only through increased fees, which may be politically unfeasible, or by rapid growth in the number of radio frequencies and television channels going into service.

This financial arrangement appears to be the most neutral of all the proposals. The broadcasting networks will still behave in the same fashion despite the added costs of the fee.

Like the controlled advertising alternative, the connection between those who pay and those who benefit is not direct. The companies who pay the fee directly benefit by using the frequency. However, they do not directly benefit from the programs broadcasted; it is the listeners who benefit.

Tax on Commercial Advertising The adequacy of yield again depends upon the rate of taxation. The growth potential will be strongly influenced by substitute advertising media. Such a tax will also have a strong tendency to be passed on to the consumer. The connection between those who pay and those who benefit is weak. Potential advertisers pay more than necessary for a service and may receive only indirect social benefits from an educational broadcasting station.

Excess Profits Tax Applied to Commercial Stations This tax is based on an established "reasonable rate of return." The adequacy of yield is again based on the tax rate. Many planners find excess profits an unstable tax-base that will not assure adequate revenue over time. Because of its instability, such a tax revenue has a good growth potential. But this may not be realized. Profits can be easily re-defined. Such a tax could also cause waste in production to avoid extra networks earnings. Such a tax is fairly neutral because it is less likely to be passed on to the consumer. The connection between those who pay and those who benefit is again weak. Broadcasting networks would receive no particular, immediate gain and would benefit only indirectly from a better educated society.

Special Fund

Related to all these financial plans is the constant issue of separating the control of funds from their source, whether it be the government or powerful corporations. A trust fund approach for financial control has been suggested to those countries who view separation as important. All taxes or appropriations collected would be controlled only by the fund. Government or special interest groups would, therefore, have less influence on how the revenue is allocated.

SUMMARY

No one method yields enough revenue to finance an educational broadcasting network adequately. But a few may be used together. This would make it possible to balance those financial plans having a stable revenue but little growth potential with those having an unstable revenue but high growth potential. The desirability of having a neutral financing scheme will depend on governmental policies toward affecting economic behavior.

The financing alternatives presented here offer three types of connections between those who pay and those who benefit. A few financial plans have a direct connection: those who benefit from educational broadcasting must pay and those who cannot pay do not benefit; thus, severely limiting the number of those who might benefit. Other plans have an indirect connection: those who pay receive direct intermediate benefits, such as the use of airwaves for advertising. Subsequent use of their money is beyond their control and their concern. But, if the fee charged is justifiable in terms of the service rendered, then maintaining an educational broadcasting system for the whole society with those fees is justifiable; otherwise, their support of an educational broadcasting network is questionable. Revenue from financing plans based on intermediate services seems more appropriate as supplemental income to educational networks than as main or sole sources.

Finally, other plans have a weak connection: certain groups are taxed which receive no direct intermediate benefit, but only indirect social benefits. These plans are justified mostly by appealing to one's sense of social responsibility.

In deciding which plan to use for financing educational broadcasting, only those criteria which most fit a country's economic situation and political philosophy should be considered.

CHAPTER X

Self-Help as a Method of Financing Education

SELF-HELP is a concept that lies at the heart of social organizations, motivating both individual and group action. Of particular significance today is the notion of people choosing to work together to provide services for their countries on a communal-sharing basis and, thus, avoiding the profit motive.

In the Euro-American tradition, the origins of formal education in large measure can be traced back to group self-help activities through such agencies as religious institutions, trade guilds, township and village communities, and workingmen's organizations.

In many developing countries, the roots of self-help activity supporting education can be found in kinship groups and caste systems. As a part of the general process of colonialism, missionaries and colonial governments utilized local communal self-help to a great degree when they began to set up early industrial style formal school systems. Today many independent governments see the group capacity for self-help among their people as a very important source in the creation and expansion of cheaper and more effective school systems.

THE PHILOSOPHICAL AND ECONOMIC PERSPECTIVES OF SELF-HELP

The current view of group self-help support for formal education in developing countries tends to involve two important perspectives: the philosophical and the economic.

The philosophy of self-help for a developing country emphasizes the need for the country or the people to be self-sufficient. This, of course, has important ideological implications for a developing country in that it emphasizes the independent identity of the country and, hence, engenders commitment and confidence among the people. But, in practice, the organization and application of self-help to education is a very complex affair which needs very sensitive handling. Indeed, the ideological advantages are lessened if group self-help leads to competition between different areas, if self-help is used as an excuse by the rich to avoid their financial obligations, or if a Central Government forgets about its less advantaged peripheral areas.

While the implications of the philosophy of self-help or self-reliance must not be forgotten, it is on the economic perspective that educational planners and financiers focus their major interest.

The underlying rationale of community self-help assumes that a community can use its own local resources to produce the goods and services that it requires. This is of considerable advantage in three areas: resources, equitable distribution of projects, and cooperation between citizens and the government.

Local materials, labor and skill, which have a low opportunity cost, can be used to provide such things as school buildings, blackboards or desks, in any area requiring them. Thus, scarcer resources for which there are no substitutes can be released and used more strategically over a wider range of projects.

The notion of spreading resources among more communities implies a better sharing and, thus, a more equitable distribution of projects across the country. Further, it is often assumed that if each area is given the opportunity to go ahead on its own initiative, there will be less room for competition for national resources, as each area concentrates freely on its own plan.

The prospect of involving local people in the actual planning of their schools in turn presents the prospect of a new basis for agreement between Central Authorities and the local people over educational objectives, which will be much more relevant to local demand and local needs, while at the same time fitting into national economic planning.

However, each of these advantages needs to be looked at carefully.

Resources

Resources can be considered under four sub-headings: capital resources, recurrent resources, the way resources are raised, and the use of self-help resources.

Capital Resources To erect a school, the basic needs are a site, building materials, labor and the relevant knowledge and skills. Given the nature of rural communities, it is possible to conceive of schools being erected out of mud, poles, and baked bricks. In reality, this is what happens almost unnoticed in many developing countries today. In many areas, local committees are formed not only to build schools but also to be responsible for ongoing maintenance.

However, communities may decide to collect money according to some locally accepted formula to improve the quality of buildings or because some members of the community prefer to offer cash, in lieu of labor. Communities may then begin to impose voluntary taxes upon themselves, thus, invalidating the whole notion of the low opportunity cost of community self-help resources. While planners may conceive of using labor-intensive methods as a substitute for capital, peasants may not agree because they consider their time valuable.

Thus, most rural communities press for heavy initial capital expenditures, not only for status reasons but also to keep down maintenance and to insure that when further governmental planning takes place, their school will attract aid or, in any event, will not be easily removed.

Recurrent Resources Apart from raising money, self-help groups can do very little to help with recurrent costs. Some very limited substitution can take place with regard to equipment, such as sand trays or local slates for pupil writing practice, but there is little evidence that this significantly reduces equipment costs. Perhaps the most effective method for reducing recurrent costs is for a community to bring pressure through a sense of communal obligation on local teachers to contribute their services cheaply and to accept local products, such as food crops, as part of their payment. But this raises some very critical questions, both about the role and status of teachers and, ultimately, the ideology of the society.

A general problem is that community goals usually exceed available resources. Institutions collapse midway or are abandoned, often causing community apathy. Indeed, the cash incomes of self-help schools can fluctuate considerably owing to changes in community attitudes, cash crop productivity or to other unforeseen problems, such as a dishonest treasurer. Such resource instability causes many self-help schools to maintain themselves precariously.

The Ways Resources Are Raised Self-help resources can be acquired through different forms of organizations, such as local, family, religious affiliations, unions, and political parties. The way resources are raised largely determines both the type and amount available. Flat fees may make the system highly regressive, and forced contributions worsen it. But if volunteer labor, time, and supplies are co-ordinated, this form of self-help financing may be far more equitable than many forms of taxation. A method that considers individual capabilities will probably raise more resources than an inflexible one.

The Use of Self-Help Resources In self-help financing, innovation comes from local knowledge, initiative, and commitment. Ideally, innovations develop spontaneously. But studies of self-help projects challenge this assumption somewhat. In general, local ingenuity offers little benefit to initial planning, but responds to practical problems. At the local level, people meet difficulties with realistic improvisations, such as hardening walls or concrete pillars to counteract termites. But there is a critical need to develop school designs which make use of self-help resources, and a new technology which relates to the capacity of self-help groups and enables them to use their resources as effectively and economically as possible.

But effective resource use cannot be determined by objective standards. It depends on who interprets actions as "wasteful" or "economical." "Cutting costs" and "improving services" are judged by criteria established by the evaluator. Thus, evaluations of self-help projects should not be made only from the outsiders' objectives. Resource use is determined mainly by the objectives of those involved in self-help projects and these relate to what the local community feels it needs in the way of educational institutions.

Equitable Distribution of Projects

The argument that self-help techniques encourage local initiative and, thus, enable each area to make the best use of its own resources certainly seems attractive. But the tendency in this situation is that the area with the most resources will make the most progress. Thus, in order that there be equality, governments should make positive efforts to help the areas with the least resources. All too often government aid is related to the projects that are created. Thus, once a self-help group creates a school or a hospital, the government begins to pay some of the recurrent costs. In this situation, self-help can lead to a pattern of unequal distribution which can easily be exacerbated through an insensitive aiding policy. Another problem occurs when individuals begin to offer assistance to self-help groups in order to exploit self-help activity for personal or political prestige or, worse, for commercial advantage.

Cooperation Between Government and Citizens

The argument that self-help techniques bring local people into closer contact with the government and, thus, create a climate in which objectives can be realistically related to local needs, such as the improvement of agriculture, has a number of aspects to it.

It is assumed that if a self-help group is involved in planning and uses its own resources, it can then use the informal and flexible techniques of the local community. Unfortunately, schools tend to be very formal institutions and are involved in the selection of students for national positions. Thus, local committees tend to be very formal in their approach to schooling and expect their schools to be very formal institutions.

It is also assumed that the local committee will relate its schools to the local ecology. But people tend to take the national perspective and see schools as agents providing children with the opportunity to earn money in the modern sector of the society. They do not see their schools working at the local level, without reference to national opportunities. Thus, low level work in agriculture is seldom taken seriously, whereas certificate or diploma studies in agriculture leading to better jobs are considered attractive.

It is also assumed that education in a rural community will have a multiple orientation to needs, such as better farming, better hygiene and better housing, as well as basic education.

Unfortunately, ministerial structures do not think this way; they tend to have specific bureaucratic goals, such as more hospital places and more cash crops. Thus, there is little sensitivity in most ministries to working out joint objectives with local people.

In most countries, there is tension between the Central Authorities' perspective of the way in which resources should be optimized and each local area's view of what it wants and what it believes is possible. Therefore, it must be remembered that communal self-help is not merely a technique to be manipulated by planners; it is the product of a community's concerns about its own development. Thus, it can only be used effectively where local concerns and national objectives are brought together in a meaningful and sensitive way. Self-help cannot be exploited merely to save resources; rather it needs to be nurtured in order to expand resources in the context of a fusion between local and national perspectives.

THE COOPERATIVE AS A SELF-HELP INSTITUTION IN EDUCATIONAL FINANCING

Recently, cooperatives have gained attention because of increased interest in self-help institutions in educational financing. The use of cooperative financing in education is relatively new. Cooperatives have dealt mostly with economic activity, but they may prove valuable in meeting educational costs, from both the philosophical and financial viewpoints.

Cooperatives are particular types of self-help and mutual aid institutions. A cooperative is the voluntary and equitable association of members to provide services that promote the collective economic and social interests of those members.

Contrary to an ordinary corporation where ownership is limited and control is based on the number of shares held, membership in a cooperative is open, and control is democratic—one member, one vote. An ordinary corporation's purpose is to maximize profits—dividends are limited only by the extent of profits and surplus earnings belonging to the corporation. A cooperative's purpose is to provide a service to members—dividends are a fixed and modest rate of shared capital, and surplus earnings belong to the members.

The Cooperative Concept Applied to Education

The application of the cooperative concept to education evolved the following types:

—Cooperative schools organized by consumers of education

—Cooperative schools organized by producers of education

—Cooperative schools organized jointly by consumers and producers of education

—Federated cooperatives organized by educational objectives

—Schools as a function of a larger cooperative social system.

The Consumer Cooperative Parents form this type of educational cooperative to purchase the service of education by hiring teachers and the proper administrative personnel. They might do so in order to overcome scarcity of school places, high educational costs, or unsatisfactory quality of education.

The Producer Cooperative Teachers form an educational cooperative to produce the service of education by establishing a school and enrolling students, as any private school might do. They do so to obtain higher standards of living or to increase their independence and professional status. This is distinct from other teacher associations, such as unions, because the pursuit of economic gains, which pressures administrators, parents, or owners in labor-management conflicts, is excluded.

The Joint Consumer-Producer Cooperative Parents and teachers become members of a common educational cooperative. They might organize in a linear form where teachers and parents have equal status and cooperate together in solving problems; or in a form where teachers and parents belong to different sub-cooperatives where the school combines the two.

The Federated Cooperative In this type, institutions join to cooperatively provide a service. The individual institutions may or may not be themselves cooperatives. Universities may have a cooperative computer center. Cooperative schools may form a service cooperative to provide transportation or specific educational facilities. Also, parent cooperatives may combine their efforts within a geographic region.

The School as Part of a Larger Cooperative Social System In the educational system of a *kibbutz* in Israel, schools are one of the many services which the *kibbutz* provides for itself, financed directly from the cooperative's general budget. School committees made up of community members administer the educational program. All major decisions are made by the total *kibbutz* community.

The Financial Effects of Cooperatives in Education

There are four basic considerations here: the burden, efficiency, scale, and supply of resources for financing education.

The Burden of Financing an Educational Service By nature, a cooperative assumes the entire financial burden. Such an organization may not rule out complementary governmental aid. Cooperative financing represents a significant shift of the burden of financing an educational service to the private sector.

The Efficiency of the Financial Arrangement To the extent that costs are borne privately, saving and reducing expenditures will be stressed. This may cause competition with the publicly financed system and may create a reference point from which to judge real and superfluous needs.

The Scale of Operation of Financing a Service Where service is the final goal, it is reasonable for members to accept new members at marginal costs, so that the scale of operations can cover what would otherwise be fringe groups. At the same time, new members are not excused from making reasonable contributions.

The Nature and Supply of Resources The consumer, producer, and joint cooperatives have a fairly low potential for capital investment, particularly in cash form. This deficiency can be compensated for substantially by personal work and contribution of goods, which meet most capital needs, especially in rural areas.

Recurrent resources are, at times, even more difficult to obtain because they most often must be in the form of cash. The federated cooperatives, representing several institutions, or the large social system cooperatives obviously have a far greater capacity for both capital and recurrent resources than the simpler forms of educational cooperatives. Their resource needs are correspondingly greater and most often must be met in cash. These types of cooperatives are fairly stable and they easily assimilate growth.

Social Effects of Educational Financing through Cooperatives

There are four basic, beneficial effects here: social interaction, closer relationship between education and life experiences, human improvement, and social progress.

Social Interaction Cooperatives may create a highly beneficial closeness between parents and teachers and, generally, between parents and the educational process. The closeness of teachers to parents can be achieved through membership, or through the communal relationship that a cooperative tends to create among members and workers. Parents might feel the pride of ownership. In any event, the strengthening of these relationships is a significant improvement in the educational process.

Closer Relationships Between Education and Life Experiences Educational cooperatives are excellent vehicles in such fundamental education as correcting or improving health habits, malnutrition, backward agricultural practices, and illiteracy. It is common knowledge that the basic education of children encounters enormous obstacles, when the family environment does not reinforce the school learning experience. Adult education also loses meaning if it is unrelated to the environment and real-life surroundings.

Human Improvement Cooperatives originate in situations which members attempt to master by their own efforts. Any cooperative, therefore, by nature fosters self-confidence, self-reliance, and self-esteem. All of these qualities benefit members of educational cooperatives and, in particular, give impetus to teacher performance.

Social Progress The sequential goals of economic and social improvements, which inspire educational efforts in presently industrializing societies, can become a single, simultaneous target of educational cooperatives.

Undesirable Social Effects The undesirable effects that educational cooperatives may produce include: social segregation by income, ethnic or other social groups; national fragmentation by tribe or region; unplanned or irrational expansion of the educational system; and, in some cases, the inability to foresee or pursue long-range goals. But these charges are common to any decentralized, private form of financing.

Government Aid to Cooperatives

If government views cooperative efforts in education as one of many programs to improve the delivery and quality of education, government can productively aid such institutions. Financially, government can help cooperatives meet some of their current expenses, offer easy loan terms, or allow beneficial tax credits. Administratively, government can release cooperatives from excessive bureaucratic constraints, develop flexible curricula and school attendance requirements and, generally, encourage the development of cooperatives. Government can also help cooperative leaders by helping them publicize their efforts through public information media. Peripheral educational benefits, such as medical care and hot meals, can also be sponsored by government in cooperative schools.

SUMMARY

In developing countries, self-help has great potential as an educational financing method. It locates extra resources and is flexible in the ways in which they are raised and used. It is also compatible with governmental assistance.

Cooperatives, a form of self-help institution, can develop into effective mechanisms for financing education because of their flexible organizational structure and their willingness to meet the needs of the people who create them.

Self-help is most effective where the concept is an integral part of a country's culture and philosophy, where it can function compatibly with government, and where it can meet both local and national goals. But care has to be taken in planning to assure that financing is stable, that recurrent revenue is adequate, and that waste is minimized.

CHAPTER XI

The Voucher System

THE voucher system is an experimental approach to regulate expenditure on education. Its general purpose is to equalize educational opportunities between diverse social and racial groups. It is a system of direct subsidies paid by the government to the parents who are given a certificate approximating the cost of a school year of education. The underlying theory is that schools would improve or provide equal opportunity because they are competing for the vouchers.

This chapter discusses several models of vouchers and their advantages and disadvantages. However, all these models are intended to help conditions mostly prevalent in developed countries. Presently, the mechanics of operation of voucher systems and the conditions existing in developing countries make vouchers unfeasible there.

OBJECTIVES OF THE VOUCHER SYSTEM

Proponents of the voucher system believe in government financed but privately provided education. They think that state provided education may not be the most desirable or effective way to educate people. They propose direct subsidies to parents who are given a certificate approximating the cost of educating a child during a school year. The parents then "purchase" the child's schooling wherever they choose. Compensatory or selective vouchers could help specific population groups obtain education more satisfactory to them.

The voucher system introduces competition, choice, and consumer buying power in the education market. Suppliers must be responsive in a free education market. The theory of this system is that schools would improve in competing for the vouchers. Given the same private resources for school expenditures as governments presently have in taxes, parents could buy as much or more education, but with wider choices.

Proponents of the voucher system believe it will: accelerate re-allocation of teachers, buildings, and instructional materials; mix diverse populations; and re-define the powers and the role of government versus parental choices, rights, controls, and responsibility in educating a country's children.

DIFFERENT VOUCHER SYSTEM PLANS

The basic concept of a voucher system has been proposed in different countries. In the 1960's, the United States, in particular, saw a great many voucher models proposed. Few of them, however, have been put into effect. These models vary in the proportion of voucher funds to income, and in the types of supplementations possible. These models are categorized in Table 1.

TABLE 1

MODEL	VOUCHER VALUE	SUPPLEMENTATION		
		Parental Tuition	Scholarship from Schools	Government Aid
Unregulated Market	equal amount for all	X		
Unregulated Compensatory	sliding scale— inverse proportion to parental income	X		
Compulsory, Private Scholarship Model	equal amount for all	X	X	
Effort Voucher	formula—choice of expenditure level and family income; equal effort for all			X
Egalitarian	equal amount for all			
Achievement	sliding scale— pupil achievement on cognitive tests			
Regulated Compensatory	equal amount for all			Sliding scale for number of disadvantaged children accepted

As Table 1 indicates, there are seven models for voucher system plans. These models are for: an unregulated market; unregulated compensation;

compulsory private scholarship; effort; an egalitarian plan; achievement; and a regulated compensatory voucher.

The Unregulated Market Voucher In this very early type, each child receives the same value voucher, but schools may charge additional tuition. Critics charge that by adding to the voucher base, rich families will create highly economically segregated schools. Also, state schools would be even less able to exert "equalizing" functions.

The Unregulated Compensatory Model Here the value of the voucher is in inverse proportion to family income, determined on a sliding scale. But because schools may still charge additional tuition, this plan also fails to equalize the purchasing power of rich and poor.

The Compulsory Private Scholarship Model Schools set their own tuition, but most provide scholarships to the poor from their own funds. There would be enough scholarships so that no successful applicant's family would pay more than it could afford. With fixed voucher value and compulsory scholarship subsidization of needy applicants from the school's own income, the necessary operating revenues could best be gotten by recruiting more affluent students. But because even the wealthiest private schools would be hard-pressed to support a high proportion of scholarship students, the result would be like current wealthy private schools which have a token enrollment of disadvantaged students.

The Effort Voucher This plan establishes different types of schools categorized by varying levels of expenditure per pupil. Such a voucher plan would reflect the family's interest and willingness to sacrifice for educating a child. The cost for each student would be determined by a progressive rate structure. This would be based on a combination of the family's income and its choice of a school that meets its preferred level of expenditure. Schools at the lowest level would be almost completely subsidized by the state, with parents probably paying a token charge. Expensive schools would charge rich families more than the level of expenditure per pupil, and poorer families, considerably less. The government voucher's value would be the difference between the family's contribution and what the school spent per pupil. With a family whose income was $5,000, the education agency might set a 1.2 per cent ($60) assessment to enroll a child in a school that spends $1,000 per pupil. This might rise to 1.5 per cent ($75) if the school spent $1,200 per pupil. With higher family income, charges to rich families become higher than the level of per pupil expenditure of the school they have chosen. The assessment percentages become progressively higher. These "extra" funds would be part of government sources of revenue for its effort vouchers. Thus, both family economic power and the burden of educating its children become equalized.

The variety of choice is expanded under this plan. Schools operating at any given expenditure level would attract an economically representative student body. Segregation by ability and performance might be enhanced. Children from families that value education and make economic sacrifices for it will probably be diligent, disciplined, and easier to teach. Such children will tend to concentrate in higher expenditure schools. Negatively, families that value education less will probably have children who are less interested in succeeding in school and who might exhibit performance and behavior difficulties. The spread between best and worst schools would increase. A promising child with disinterested parents would suffer a considerable injustice.

The Egalitarian Voucher Here all vouchers and all tuition charges are equal. Schools could solicit funds from national, local, or private agencies, churches, alumni, or foundations. This plan would encourage the survival of church schools. It would, theoretically, equalize per pupil expenditure between rich and poor because expenditures above the voucher value are not allowed. This value would be set at the level of per pupil expenditure determined by school boards and town budgets. An egalitarian voucher would tend to equalize allocations for education on children from different income groups within the same district, but it would not eliminate disparities between districts. Poorer areas will have lower value vouchers, as dictated by its taxpayers. Parents wanting to use vouchers and still spend an additional amount could not do this. Because schools would have finite resources, they would probably admit children who are cheaper to teach —the able and talented. This again would foster segregation by ability. Furthermore, because it costs more to educate the disadvantaged, egalitarian vouchers, in practice, might not respond to the problem of allocating larger resources to needier areas.

The Achievement Model Voucher As in other models, the achievement voucher is given to the parents so they can choose the school for their children. But when the school cashes the voucher, its value depends on the pupil's achievement at the school. Unlike other vouchers, the value is not determined by a school's costs or by what parents want to spend, but rather by whether the school succeeds in teaching the child. Schools that substantially raise test scores receive larger vouchers.

This approach is traditionally known as "payments by results." The basic assumption here is that society can measure the effects of schooling and that measured "good" effects should be rewarded. But the achievement model has two defects. First, schools will tend to enroll children whom they judge will improve most rapidly and to exclude problem children—those with low ability or motivation, or those whose scores might not rise as rapidly for whatever reasons. Second, test scores may be unreliable. They usually measure only cognitive gains to the exclusion of attitudinal outcomes and do not often correlate meaningfully with later adult success. Reliance on tests is often questionable.

The Regulated Compensatory Voucher This is the most comprehensive voucher plan. Basic voucher values would be the same, but formulas would increase the voucher value for children with special educational problems. No voucher school could charge tuition higher than the basic voucher value. Schools would admit students partly by processing applications and partly by lottery. School income would be increased according to the number of disadvantaged children they enroll. For every educationally disadvantaged child accepted, schools would receive a bonus, either directly from the administering agency or in the form of an increased voucher from these children. The increased voucher value for "problem" children would provide financial incentive to schools and insure placement of slow-learners, children with behavior problems or physical handicaps, low-income or minority group children—the "educationally disadvantaged."

This plan involves a regulatory agency to disburse funds, to gather, evaluate and disseminate information on schools to parents, and to regulate admission policies. This agency would establish a loan fund to help start new schools and to pay the costs of transportation to insure a geographic mixture. The model would certainly provide for the educational needs of the disadvantaged and it would encourage a diversity of educational alternatives. But it would also create the potential for an obstructive bureaucracy in an agency that would have enormous responsibilites for supervision, inspection, fund disbursements, admissions, grading, expulsions, and publicity.

Also, accepting more disadvantaged children from another locality with their accompanying financial bonuses would limit the available number of places for middle-class children in a particular neighborhood school. Middle-class parents might not be able to afford the much higher tuition charges of non-voucher private schools. They would be "frozen" into public schools whose expenditure level was below what they might be willing to spend and they would have fewer choices of school location.

ADDITIONAL VARIATIONS OF VOUCHER SYSTEM MODELS

Additional variations of a more limited nature have also been suggested where the vouchers are confined to: public schools, to private schools, to poor schools, or to non-profit schools. Though limiting the scope may encourage wider public acceptance, each plan carries its own failings. Some undesirable consequences of these variations might be: less educational initiative and exploration of alternatives; neglect of the public schools; imprecise financial accountability; and a lack of carefully regulated and defined standards.

The Lifetime Block-Grant for Education This plan would not restrict vouchers to schools. Rather, a fixed amount would be granted to be spent over a person's lifetime on anything educational: for instructional materials; paying teachers for neighborhood mini-schools; buying math games; research assistantships; music and other lessons; and so on. The premise of this plan is a unique variation because it recognizes and encourages education beyond required schooling throughout adult life.

THE VOUCHER SYSTEM AND DEVELOPING COUNTRIES

The voucher system can be useful in a context where the provision of education depends on an extensive, privately operated school system, and where the government is interested in improving effectiveness of family decision-making in education and equalization of educational opportunities.

In these particular circumstances, the education voucher would modify negative effects of a completely free market by regulating expenditure on education. Financially and distributively, it could meet the requirements of those who favor universal subsidies—subject to regional income and age differentials—as well as the requirements of those who prefer selective subsidies. It is a potential method for rapidly equalizing educational opportunities. It can also provide a way for mixing diverse social and racial groups, offering parents a wider choice of schools, and for offering society a more responsive and efficient balance between educational consumption and supply.

But some of the necessary general conditions for the success of this financing system are rarely present in developing countries. Vouchers only work in areas with high population density. Most people in developing countries live in rural areas. Because mobility and diversified choice are basic to the plan, there is a continual need for excess capacity within the system. This is a luxury that few developing countries can afford. Administering such a system requires a sophisticated system of communications, a literate population, and a desire to innovate. Often these pre-requisites are absent in developing countries. This would make the cost of administrating such a complex system impossible.

Finally, hositility by politicians would result because of their reluctance to relinquish power over fund disbursement, plant construction, salaries, certification, curricula, and materials.

Ideally, the objectives of a voucher system are desirable. But the mechanics of operation seem unduly bureaucratic and cumbersome; and for this reason, they are generally not feasible in developing countries.

CHAPTER XII

External Aid to Education

EXTERNAL aid has been received in various forms and under many auspices by developing countries for use in their educational programs. The amount available over the last decade has been greater than both recipient and donor countries realize.

External aid to education includes technical assistance and capital assistance—grants and loans—to primary, secondary (general, technical, vocational), and higher levels of education, as well as for adult education, educational planning, research and administration, and scholarships to study abroad.

This chapter gives an overview of the types of aid received by developing countries and presents some of the specific problems involved in external aid to education.

External aid to education will be discussed in terms of its donor-recipient relationship, its content, and its distribution within the educational sector.

THE DONOR-RECIPIENT RELATIONSHIP

Some aid is bilateral—there is one donor and one recipient country. Aid can also be multilateral wherein aid to developing countries is provided by several countries banding together, or by international organizations, such as UNESCO or the World Bank.

Bilateral aid may come from official government sources or it may come from various private organizations in the donor country. Most aid given to developing countries is bilateral and sponsored by governments. Current information on the extent of aid compiled by the Development Assistance Committee (DAC) of OECD puts official bilateral aid to education from DAC members at about ten per cent of the total aid provided to developing countries. Unfortunately, there are few statistics and little information available on aid to education to developing countries from socialist and communist countries, but estimates indicate that their aid is comparable to that of Western countries.

Private bilateral aid is also significant, but difficult to estimate. Estimates of private aid to education range from one-fourth to one-third of total bilateral aid. This assistance comes from business firms and non-profit organizations, such as foundations and churches. Religious missions have traditionally provided education. These have been curtailed somewhat, but they are still very active, particularly at the primary level. Trade unions are active in vocational education and private foundations are especially active in higher education.

Besides these private sources, business firms with foreign interests frequently train their own personnel in countries where they transact business. Many firms also pay for training foreign personnel in their home countries. Some enterprises also offer formal education and literacy classes; others send their personnel to developing countries as part of technical assistance programs.

The geographic distribution of bilateral aid is partly a reflection of the cultural, traditional, commercial, and poltical relationship between donors and recipients. The French and the English supply most of the teachers working in Africa. African countries also receive much assistance from private non-profit organizations interested in education. Israel concentrates its training programs in African countries, south of the Sahara. Spain focuses its aid in South America. Socialist countries concentrate aid mostly in Asia and Africa, although significant aid is also given to socialist regimes elsewhere, such as Cuba.

Aid distributed by multilateral agencies is steadily increasing. There is significantly greater activity by the World Bank group and by regional banks, such as the Inter-American Development Bank. Banks extend mostly loans and credits. UNESCO provides primarily educational grants. Other specialized United Nations agencies also sponsor educational aid programs. Channelling aid to developing countries through multilateral agencies seems to be a growing practice.

THE CONTENT OF EXTERNAL AID

The content of external aid falls into two basic categories: technical assistance, and capital financing.

Technical assistance includes: personnel at administrative, technical, and volunteer levels; contributions for students and trainees; supply of equipment and material for research, training and demonstration purposes; and other categories, such as the supply of technical support and contract services.

Personnel such as administrators, advisors, teachers, and volunteers comprise the bulk of technical assistance for education. Statistically, it is difficult to differentiate various personnel roles because one person may administer, teach, and advise.

The type of personnel that donor countries provide depends mostly on their previous relationship with developing countries: the United States provides mainly advisors; Germany, chiefly administrators; and France and England, primarily teachers.

Most scholarships are awarded for study in the donor country or in another developed country. But, recently, there has been increased emphasis on first, establishing schools and universities in developing countries, and, then, providing scholarships to study at these institutions.

Teaching materials, such as books, audio visual aids, teaching machines or programmed instruction are also provided. Most donors who sponsor teachers also provide the relevant materials. Few statistics are available concerning this type of aid because such costs are difficult to determine, but the total amounts in monetary terms are very small.

Capital financing is provided in the form of grants or loans. Much of this aid comes from multilateral agencies. Only ten to fifteen per cent of total DAC members' expenditures for education is provided in the form of grants or loans. Some wealthy private donors also provide capital in the form of grants. Whether loans or grants should be the predominant form of such aid is still being debated.

DISTRIBUTION OF AID WITHIN THE EDUCATIONAL SECTOR

External aid to primary education is losing favor with donors and recipients alike. It is thought that the needs of primary education should be met by a country's own resources. This is owing to the fact that external aid can make only marginal contributions to an educational level where the numbers of students and teachers to be influenced is the greatest, and where knowledge of the culture and national language is vital. However, external aid at the primary level can play an important role in curriculum development, supply of materials, and introduction of new technology.

External aid has been substantial at the secondary level, mostly in the form of teachers and administrators of vocational and technical training. But, recently, because many more and better trained teachers are needed to satisfy the large increase in demand for secondary education, there has been more emphasis on providing aid in the form of grants or loans that will permit the successful training of teachers at the secondary level in developing countries.

There is also a growing emphasis on aid to improve teacher training and to provide equipment and teaching materials.

Higher education and high-level technical education has received great emphasis because both donors and recipients increasingly felt that those were the levels where local human resources are least available, and where aid could be most effective. Most external aid first consisted of scholarships to study in donor countries because the per student cost of higher education in many developing countries was prohibitive, or because higher education systems in recipient countries were undeveloped. But aid is now being allocated in an effort to keep higher education at home. The universities in donor countries are working with developing countries to provide financial, material, and technical help in setting up new universities and educational facilities, and in strengthening what exists.

RATIONALE FOR ACCEPTING EXTERNAL AID TO EDUCATION

Justification of external aid to education has been debated since such programs began. The arguments are often enmeshed in the larger debate of justifying all types of external aid. But there are some strong arguments specifically related to education: namely, the need for breaking the cycle of educational poverty; the need for complementing the aid provided to other sectors with aid to education; the need to shorten the lag between obtaining financing for investment and the development of human capital; and the need of insurance against the risks involved in experimentation in education.

Proponents of aid for education consider educational development a prerequisite to economic growth and overall national development. Many developing countries do not have the taxable capacity to support compulsory free primary education. This taxable capacity depends on national production, which is a function of economic development. This, in turn, depends on educational development in general because as more people are educated, they earn more and, hence, pay more taxes. Many proponents of external aid feel that only liberal external aid can break this circle of educational poverty. Once the educational system is developed, the proponents assert, developing countries will no longer be hindered in their economic growth by the lack of education.

External aid to education is also needed to complement other forms of external aid. Efficiency in the use of capital assistance in any sector depends upon the availability of able people to implement and administer projects. Failures of implementation of many international assistance programs can be traced to problems of improperly trained personnel. General external aid to a country imposes, therefore, an extra burden on the local educational system to provide the manpower required for the development programs. External aid specifically for education may help alleviate the situation.

But education and training take time. External aid can bridge the time lag either by providing possibilities for training abroad or by providing the initial investment and technical knowledge needed for creating a local capability for training the required manpower at home.

The introduction of innovations is indispensable for improving the educational system. These innovations may apply to many developing countries. But experimentation in education is risky. Poor countries cannot afford to gamble with their meager resources. External aid can provide some insurance against the odds. A donor country that provides aid for experimentation and innovation in many developing countries can perform the function of an insurance company that spreads the risks over many clients, thus lowering the private risks of each one of them.

ISSUES FACED BY DONORS OF AID TO EDUCATION

Issues in aid to education are similar to those arising from any type of external aid, such as the relationships between donor and recipient, and the control and administration of the aid provided. In education, however, these issues become more complex because education is intimately related to a society's culture, values, and traditions. But there are two issues basic to all external aid to education; namely, choice of educational area or project to be supported, and vehicle by which this aid is to be provided.

Since there is not enough assistance to solve all the problems of education, a decision has to be made whether to spread financial resources over the entire educational sector, or to allocate funds to only a few selected areas, where adding marginal inputs may have a sizable impact on the system. Some related questions are: Should a specific area, such as technical education, higher education, or the physical sciences be given priority over more general courses of study? Should aid go to strengthen research and innovation, or to provide resources to educate broader masses? Should aid provide for capital expenditures or recurrent expenditures, or both?

After the object of aid is determined, the problem of choosing the vehicle to provide aid remains. Should aid for education be provided in the form of teachers and advisory personnel? In the form of books, or technology? Should it be provided in the form of scholarships to study in the donor country? Or should it be provided only in the form of foreign exchange or credits, leaving the choice of what to do with the resources to the recipient country?

These few examples show the intricacy of the problems and, hence, the difficulty of finding clear-cut solutions. There are no easy answers, and each country—donor and recipient alike—must analyze the specific issues in relation to the particular circumstances, surrounding aid to education.

SUMMARY

Although external aid for education can seldom become significant when compared with the amounts of local resources being spent on education, it can play a strategic role in breaking the circle of educational poverty by providing monetary resources and/or making accessible human resources that would take a long time to develop locally.

If external aid, in general, is to be accepted by developing countries, then complementary aid to education is also required to provide the educated personnel that this external aid requires. If innovations are to be introduced, then external aid can reduce the risks, and thus encourage change. The vehicle by which this external aid is to be provided should be adapted to the particular circumstances of the recipient country, and its relationship to the donor.

CHAPTER XIII

Forecasting Resources for Education

THERE are no complete models describing current ways to forecast educational resources for an intermediate term (of five to seven years) in developing countries. This problem is caused in part by the lack of data on private educational expenditures, and the general difficulty of forecasting government revenue in developing countries, which makes it difficult to forecast the educational component. If education is financed by local resources, the problem is made more difficult because of the many ways used to forecast local resources. The methods developed countries use to forecast resources for education are seldom useful to developing countries. Relationships between the Central Government and local governments, tax-bases, and legal restrictions differ considerably.

Because of these difficulties, the approach here will not be to describe existing ways of forecasting resources for education but to suggest different ways of forecasting. Their application will have to be tempered by local conditions and particular environments.

SOURCES OF RESOURCES FOR EDUCATION

These resources come mainly from government, central and local, and the private sector. Education claims a sizable portion of Central Government budgets—up to 25 per cent in some countries. The proportion of local budgets is still higher when education is administered by local or state authorities. Where there are private schools, or where public schools charge education fees, the private sector contributes directly to education through fees and donations. Private expenditures on education are related to the level of disposable income, which should also be considered in making projections.

Forecasting resources for education requires first, a forecast of revenue of these major sources of funds: Central, state, and local government, and private, disposable income—income after taxes. Second, it entails a forecast of the share of education in the Central, state, and local government budgets, and its relationship to disposable income.

FORECASTING RESOURCES FOR EDUCATION SUPPLIED BY GOVERNMENT

This is by far the most important area in forecasting the total resources for education. The first step, revenue forecasting for government budgets, requires: estimates of revenue that will accrue by growth of the tax-base because of economic growth; estimates of resources that may be raised by discretionary action; and foreign aid or loans. This can be represented as:

$$G = T(Y) + A + F \qquad (1)$$

where

G = total government revenues
$T(Y)$ = taxes that accrue because of growth of income
A = discretionary action
F = foreign aid or loans.

Because discretionary action is very hard to forecast or to foresee, it need not be discussed here.

Any forecasting of revenue growth due to growth of the tax-base involves the assumption that there is an historical relationship between income and tax revenues. This relationship can be expressed as:

$$T_{t+1} = T_t(1 + \eta \frac{\Delta y}{y}) \qquad (2)$$

where

T_{t+1} = tax revenue in period $t + 1$
T = tax revenue in period t
η = tax elasticity—per cent change in tax revenue because of per cent change in income
$\Delta y/y$ = per cent increase in income.

But income and tax-base are not perfectly related. Instead of considering a direct tax-to-income relationship, the income elasticity coefficient can be broken down into rate and base components:

$\eta = f(r, \epsilon_B)$
r = tax rate
ϵ_B = tax-base elasticity—per cent change of tax-base because of a per cent change in income.

The breaking down of taxes in rates and bases is especially useful for forecasting those taxes earmarked for local education. The tax-base can then be forecast as a function of exogenous variables. If, for instance, the local tax-base consists of property values, an exogenous variable could be population growth, industrial development, etc.

This type of forecast assumes the tax structure will stay the same—a valid assumption for intermediate forecasting. But, if changes are contemplated in the tax structure, historical values of the coefficients will provide only broad approximations.

Forecasting foreign aid and loans is at best risky. When foreign aid or loans are categorical, they can be included in an intermediate forecast because there is usually enough lead-time from the moment the loan or grant is negotiated to the time it is granted. But when loans and grants are of the general type, it is very hard to forecast them unless there is a pattern that can be extrapolated into the future.

FORECASTING EDUCATION'S SHARE IN GOVERNMENT EXPENDITURES

Once the government budget is forecast, it is necessary to forecast what proportion will go to education. The following models can be used for forecasting.

Constant Increase of Resources This simplest model assumes that resources for education will increase at a constant rate, regardless of the size of the total government budget. This can be expressed as:

$$R_{t+1} = R_t (1 + \alpha) \tag{3}$$

where

R = resources for education
$t, t+1$ = period of time
α = constant rate of increase.

Here, alpha can be derived from historical data.

Constant Share of the Budget This can be expressed as:

$$R_t = \beta_E \left(\sum_{j=1}^{n} B_{jt}\right) \tag{4}$$

where

R_t = resources for education for period t
β_E = share of education in total budget
B_{jt} = budget for activity j in government for the period t
n = number of activities in government.

Constant Share of the Budget Increase This can be expressed as:

$$R_{t+1} = R_t + \beta_E \left(\sum_{j=1}^{n} B_{j_{t+1}} - \sum_{j=1}^{n} B_{j_t}\right) \quad (5)$$

where

R_{t+1} = resources for education for period $t + 1$

R_t = resources for education for period t

β_E = share of education in the increase of the total budget

$\sum_{j=1}^{n} B_{j_{t+1}}$ = total budget for all government activities for period $t + 1$

$\sum_{j=1}^{n} B_{j_t}$ = total budget for all government activities for period t.

The Residual Claimant Approach This model differs from the constant share of the budget increase model in that the share of the increase is not constant. It is a function of priority claims of other sectors or programs on the increases of the budget. For example, if debt repayments, new public works, or defense expenditures have higher priorities than education, the educational share in the budget increase will be reduced, possibly to zero.

Resources for education for period $t + 1$ can be expressed as:

$$R_{t+1} = R_t + \beta_E \left(1 - \sum_{j=1}^{n-x} \beta_j\right) \left(\sum_{j=1}^{n} B_{j_{t+1}} - \sum_{j=1}^{n} B_{j_t}\right) \quad (6)$$

where

$(n-x)$ is the number of activities that have higher priority claims on the increased budget.

Where

$(1 - \sum_{j=1}^{n-x} \beta_j)$ is the share of these activities in the budget increase, then

β_E will be the share of education in the "residual" after the claim of the $(n - x)$ activities has been satisfied.

The Expenditure and Residual Claimant Approach The share of a ministry in a total budget results from bargaining and the "socialization process" among ministries or departments. The case for increasing education's share in the total budget, or for improving its position in the hierarchy of priorities of government expenditures is strengthened when the fulfillment of national goals requires increased expenditures for education. One such national goal is often expressed in terms of participation ratios for elementary, secondary, or higher education; that is, enrollment as a percentage of the population eligible for each educational level.

If in equation (5), β_E is a function (f) of the difference between the forecasted increase in expenditures and resources otherwise available, and if education's share in the budget had remained the same as in previous periods, then:

$$\beta_{E_{t+1}} = \beta_{E_t} + f\,[(E_{t+1} - E_t) - \beta_{E_t}\,(B_{t+1} - B_t)] \tag{7}$$

$\beta_{E_{t+1}}$ = forecasted expenditure on education in period t+1

β_{E_t} = share of education in period t

E_{t+1} = expenditures of education in period t+1

E_t = expenditures of education in period t

B_{t+1} = total government budget in period t+1

B_t = total government budget in period t.

Total forecasted expenditures for period t +1 are:

$$E_{t+1} = C_e p_e A_{e_{t+1}} + C_s p_s A_{s_{t+1}} + C_u p_u A_{u_{t+1}}$$

Expenditures for period t are:

$$E_t = C_e p_e A_{e_t} + C_s p_s A_{s_t} + C_u p_u A_{u_t}$$

The difference between expenditures of period t + 1 and t is:

$$E_{t+1} - E_t = (A_{e_{t+1}} - A_{e_t})\,C_e p_e + (A_{s_{t+1}} - A_{s_t})\,C_s p_s + (A_{u_{t+1}} - A_{u_t})\,C_u p_u$$

where

C_e = cost per student in elementary school

C_s = cost per student in secondary school

C_u = cost per student in university

p_e, p_s, p_u = participation rates by levels of schooling, elementary, secondary, and university

A_e, A_s, A_u = age groups in the population levels of schooling.

If costs per student at the different educational levels remain the same, total cost increases will be proportional to the increase of the school-age population.

When there is an increase in cost per student because of increased labor costs—teachers, administrators, etc.—or costs of buildings and materials, there is an added increase in total forecasted expenditures. This can be represented as:

$$\Delta E_f = \Delta C_e p_e A_{e\ t+1} + \Delta C_s p_s A_{s\ t+1} + \Delta C_u p_u A_{u\ t+1}$$

where ΔE_f equals the added increase in forecasted expenditures and ΔC_e, ΔC_s, ΔC_u equal the increases in costs per student in the different educational levels.

The greater the difference between the increase of necessary expenditures and the funds available in previous years under distribution arrangements, the higher the chances for increased allocation of budget resources to education—providing the government's policy is to maintain the rate of participation of different age groups in the educational process.

Situations similar to the case above will arise if programs for the intermediate period are designed to satisfy specific high priority manpower or other needs.

FORECASTING CONTRIBUTIONS BY THE PRIVATE SECTOR

To forecast such contributions requires an estimate of disposable income. A simple extrapolation of historical data is adequate for the intermediate forecasting term—around five to seven years—because disposable income is a stable component of the economy.

The share of disposable income going to education can be calculated as follows:

$$P_{t+1} = P_t \left(1 + \eta_p \frac{\Delta I}{I}\right) \qquad (8)$$

where

P_{t+1} = private expenditures on education in year $t + 1$

P_t = private expenditures on education in year t

η_p = elasticity of private expenditures on education with respect to disposable income—per cent change in private expenditures on education because of a per cent change in disposable income

I = disposable income.

Disposable income can be further disaggregated by income class if significant changes in income classes are expected, although for intermediate term forecasts this is very unlikely.

When corporate donations are a sizable part of total private expenditures, a separate forecast for corporation profits is possible. If η_c is the elasticity of corporate contribution to education with respect to profits, π is corporate profits, and K is corporate contributions to education, then

$$K_{t+1} = K_t \left(1 + \eta_c \frac{\Delta\pi}{\pi}\right) \tag{9}$$

SUMMARY

Forecasting of resources for education shares all the general difficulties of forecasting government expenditures, in addition to the difficulty of forecasting education's share of the total budget. There is no systematic, proven method for projecting resources available for education. There is no positive approach available for forecasting based on the experience in developed countries, let alone that of developing countries.

Here, some alternative ways to forecast educational resources have been presented. These range from simple extrapolation of resources from historical data to more detailed forecasts in which the size of the total budget is forecast and then education's share is determined on the basis of education's priority claim on the increased total government resources. Actually resources for education are determined by the regular budgetary bargaining process that goes on between the different sectors that have claims on public funds. But, it is still desirable to be able to estimate possible outcomes under different conditions. The formulas presented permit forecasts of future resources on the basis of estimated economic growth and other factors and of needs for expenditures based on increased population, and rising costs. These can be extremely useful for educational administrators.

CHAPTER XIV

An Index for Measuring Educational Funding

IN their attempts to find ways of measuring a country's performance in various endeavors or of comparing activities between countries or regions within a country, economists have developed a variety of tools. One of these is an "index of effort." This index enables countries to compare the amount of activity exerted in a particular sector with an average of sectors, or with the same sector in different regions. This index can also be used to compare a country's level of activity with that of other countries. For analytical purposes, countries or regions can then be ranked by effort. This technique has been applied to analyze the nature of activity in education of both developed and developing countries.

The most commonly used technique for comparing educational effort relates educational expenditures to a measure of national income. Where two countries have equal national income but one spends more on education, that country exerts a greater effort in education.

Economists have also used another index of effort which relates educational expenditures to the size of the budget. Besides providing comparisons among nations, this index can be used to compare the efforts of different sectors within a country. If, for example, the ratio of defense expenditure to total budget is larger than that of educational expenditure to total budget, the defense effort of the country is greater than the educational effort.

Both of these approaches have some problems. The first, involving income, assumes that the GNP is an accurate reflection of the country's taxable capacity, and that the GNP is a valid characteristic for comparing nations. But other indicators can be used, such as "tax capacity." There are also monetary conversion problems that distort inter-country comparisons. The second approach, involving budget expenditures, assumes that willingness to spend for education is reflected in the share of education as compared with other expenditures. It ignores the willingness of the private consumer to spend on education relative to other consumer goods and also ignores the influence of political decisions, such as the extent of taxation, and the allocation of tax money to politically sensitive sectors.

This chaper proposes a model for an Index of Educational Funding (IEF) that eliminates the problems of the currently used indicators and provides a more accurate and more useful index.

THE INDEX OF EDUCATIONAL FUNDING

Let

$$E_t = E_c + E_s + E_L + E_p \qquad (1)$$

where

E_t = Total educational expenditures
E_c = Central Government educational expenditures
E_s = State government educational expenditures
E_L = Local government educational expenditures
E_p = Private educational expenditures

and

$$\begin{aligned} E_c &= e_c B_c \\ E_s &= e_s B_s \\ E_L &= e_L B_L \\ E_p &= e_p I \end{aligned} \qquad (2)$$

where:

e_c = Share of educational expenditures in Central government budget
e_s = " " " " " State " "
e_L = " " " " " Local " "
e_p = " " " " " Private " "
B_c = Central Government Budget Expenditures
B_s = State " " "
B_L = Local " " "
I = Disposable Income

and

$$\begin{aligned} B_c &= r_c T_c + T_{rc} \\ B_s &= r_s T_s + T_{rs} \\ B_L &= r_L T_L + T_{rL} \end{aligned} \qquad (3)$$

where T_r = positive or negative net transfers from a level of decision-making, that is, T_{rc} = net transfers from Central Government to the state, local, and private sector and

r_cT_c = Tax rate × tax base of Central Government

r_sT_s = " " × " " " State "

r_LT_L = " " × " " " Local "

If transfers are made a function of locally raised revenues, the following equation can be written:

$$\begin{aligned} B_c &= r_cT_c(1 + t_c) \qquad \text{where } t_c = \frac{Tr_c}{r_cT_c} \\ B_s &= r_sT_s(1 + t_s) \qquad \text{where } t_s = \frac{Tr_s}{r_sT_s} \\ B_L &= r_LT_L(1 + t_L) \qquad \text{where } t_L = \frac{Tr_L}{r_LT_L} \end{aligned} \tag{4}$$

and formula (1) becomes:

$$E = e_cr_cT_c\,(1 + t_c) + e_sr_sT_s\,(1 + t_s) + e_Lr_LT_L\,(1 + t_L) + e_pI \quad . \tag{5}$$

If a measure of educational expenditures is defined as $\widehat{E}$, where $\widehat{r}_c$, $\widehat{r}_s$, and $\widehat{r}_L$ are "average" tax rates derived as regression coefficients from a sample of countries using T_c, T_s, and T_L as proxies for tax-bases of Central, state, and local governments; if $\widehat{e}_c$, $\widehat{e}_s$, $\widehat{e}_L$ and $\widehat{e}_p$ are a function of independent variables (i.e., $\widehat{e}_p$ could be a function of income per capita, and $\widehat{e}_c$ a function of the share of defense expenditures in the national budget; and if the transfers' coefficients are completely unrelated from one country to another, then the formula for "ideal expenditures" for a given country is:

$$\widehat{E} = \widehat{e}_c\widehat{r}_cT_c\,(1 + t_c) + \widehat{e}_s\widehat{r}_sT_s\,(1 + t_s) + \widehat{e}_L\widehat{r}_LT_L\,(1 + t_L) + \widehat{e}_pI \quad . \tag{6}$$

If $\dfrac{E}{Y}$ = educational ratio

and

$\dfrac{\widehat{E}}{Y}$ = educational capacity ratio

then an Index of Educational Funding can be defined as:

$$\frac{E}{Y} \Big/ \frac{\widehat{E}}{Y} = \frac{E}{\widehat{E}} = \frac{e_cr_cT_c\,(1 + t_c) + e_sr_sT_s\,(1 + t_s) + e_Lr_L\,T_L\,(1 + t_L) + e_pI}{\widehat{e}_c\widehat{r}_cT_c\,(1 + t_c) + \widehat{e}_s\widehat{r}_sT_s\,(1 + t_s) + \widehat{e}_L\widehat{r}_L\,T_L\,(1 + t_L) + \widehat{e}_pI} \; . \tag{7}$$

If equation (7) is subtracted from one and the denominator is labelled "D", it is possible to calculate the discrepancy between actual expenditures in education and the ideal expenditures—those that would arise if the country were to tax its tax-bases at the "average" tax rate and spend on education an "average share" of the public and private budget. It is also possible to calculate the proportions of the different levels of government and the private sector in this discrepancy. This new equation can be expressed as follows:

$$1 - \frac{E}{\hat{E}} = \frac{\hat{E} - E}{\hat{E}} = \frac{(\hat{e}_c\hat{r}_c - e_c r_c)\, T_c\, (1 + t_c)}{D} + \frac{(\hat{e}_s\hat{r}_s - e_s r_s\; T_s\, (1 + t_s)}{D}$$

$$+ \frac{(\hat{e}_L\hat{r}_L - e_L r_L)\, T_L\, (1 + t_L)}{D} + \frac{(\hat{e}_p - e \text{[illegible]}}{D} \quad . \qquad (8)$$

NOTES TO THE IEF

For simplicity in the IEF, the taxable base of state and local governments was considered a single measurement. But in fact, the base is composed of many taxable areas. An analysis of each one has to be done separately. Thus,

$$\begin{aligned} r_c T_c &= \sum_{i=1}^{m} r_{ic} T_c \\ r_s T_s &= \sum_{j=1}^{n} r_{js} T_s \\ r_L T_L &= \sum_{k=1}^{n} r_{kL} T_{kL} \end{aligned} \qquad (9)$$

where i, j, k, connote the different kinds of taxes in Central, state, and local governments, respectively.

But because in developing countries there is a lack of data on state and local taxes, a simplified version of the IEF, combining all levels of government, can be expressed as follows:

$$\frac{E}{\hat{E}} = \frac{e_c \sum_{i=1}^{n} r_i T_i + e_p I}{\hat{e}_c \sum_{i=1}^{n} \hat{r}_i T_i + \hat{e}_p I} \qquad (10)$$

where

e_g = Share of educational expenditures by all government levels in the total government budget

r_i = Tax rate of type i

T_i = Tax base of type i

e_p = Share of private educational expenditures

I = Disposable income

and formula (8) becomes:

$$1 - \frac{E}{\hat{E}} = \frac{(\hat{e}_g - e)\sum_{i=1}^{n}(\hat{r}_i - r_i)T_i + (\hat{e}_p - e_p)I}{\hat{e}_g \sum_{i=1}^{n}\hat{r}_i T_i + \hat{e}_p I} \qquad (11)$$

If there are no private expenditures,

$$\frac{E}{\hat{E}} = \left(\frac{e_g}{\hat{e}_g}\right) \times \frac{\sum_{i=1}^{n} r_i T_i}{\sum_{i=1}^{n}\hat{r}_i T_i} \qquad (12)$$

where

$$\frac{\sum_{i=1}^{n} r_i T_i}{\sum_{i=1}^{n}\hat{r}_i T_i} = \text{tax effort}$$

and

$$\frac{e_g}{\hat{e}_g} = \text{educational budgetary effort}$$

Formula (11) then becomes:

$$1 - \frac{E}{\hat{E}} = \frac{(\hat{e}_g - e_g)}{\hat{e}_g} \times \frac{\sum_{i=1}^{n}(\hat{r}_i - r_i)T_i}{\sum_{i=1}^{n}\hat{r}_i T_i} \qquad (13)$$

MEANING AND USES OF THE INDEX OF EDUCATIONAL FUNDING

There is a tendency in developing countries and in international agencies to use international comparisons to gauge the development or the performance of a given country or sector. A Minister of Education may often demand that educational expenditures be a given percentage of national income because advanced countries spend such a percentage in their budgets.

This type of comparison ignores the "effort" made by the different countries. If countries A and B have the same income per capita, but a large segment of the economy in A is not monetized, while in B most of the income comes from mining, then country B clearly has an easily accessible tax-base, while A does not. Therefore, collection of taxes will be large in B and its public sector will also probably be larger. But, if the public sector is the same in both countries, the tax effort in A is clearly larger.

If most educational expenditures are made locally in country A and at the Central Government level in country B, and if the taxable base of local government in country A is small but that of country B is large, country A's tax effort may be greater than B's, even though B spends more. In other cases, the proportion of education in the total budget may be high, but the tax effort small, or vice versa. It is therefore very important, for policy reasons, to ascertain in what area an effort is being made: whether in the tax area, in the budget area, or in the private sector.

The IEF describes the relationship of an actual effort to an "average effort" in the areas of taxation and educational budgets, at all levels of government and in the private sector. This average effort is not normative. It reflects the average practice of a group of countries. Its role is an explanatory one. If a country has an index less than one, the IEF explains in what area this country makes a lower effort compared with the statistical average of the sample because the same country may exert an above average effort in other areas. This does not necessarily mean that efforts should be raised to reach the average in the particular area. But the IEF provides an overview that may be useful in a more detailed analysis of a particular situation. The choice to tax or not to tax or to increase the share of education in the budget may depend on dissimilar political variables between countries, in addition to taxable capacity or educational needs.

This type of analysis may help the particular country consider the sources of financing expenditures for education. The increasing demand for additional funds for education makes it imperative to see whether the public or any particular sector of government is meeting the burden. In this way, the country can avoid overtaxing an already overburdened sector solely due to historical precedents. There is no doubt that many factors—social, cultural, historical—have contributed to the differences of efforts between countries. But when differences are made explicit, better criteria for decision-making emerge.

For developing countries where a federal system of government exists that allows provinces to tax economic activity, the IEF can be used to determine the effort that each province exerts in the educational sector. This relative measurement can provide a basis for distribution of funds from the Central Government to provinces and insure that those provinces making a stronger effort get a proportionately higher amount of resources.

International agencies and donor countries can use the IEF as one of the many indicators to guide decisions on the proportion of aid to be given to different countries in the same way that countries can deal with their provinces. Classified by private and government sectors, the IEF will clearly show the willingness of people to spend privately on education compared with government financing, and thus clarify education's share in the total budget.

An index when measured over time for the same country or province may help determine whether aid funds were used to replace or to increase local resources.

Finally, some grants-in-aid that require extra large commitments of local funds can be appraised against the increased burden to the recipient that this grant may imply.

PART II

Problems of Efficiency and Finance

CHAPTER XV

Efficiency in Education

FINANCING of education concerns not only the analysis of sources of funds, but also the efficient use of these funds. The more efficient the educational system is, the less funds it will require to fulfill its goals and more can, therefore, be accomplished within a given budget.

But efficiency is an elusive term, and it is imperative that educationists have a clear understanding of its meanings. They should also know the basic tools needed to analyze problems in terms of efficiency. By so doing, they will perform more effectively and increase efficiency.

This chapter discusses the concept of efficiency as it is viewed by a decision-maker. Broad areas for improving a system's efficiency are suggested.

The basic tools for evaluating the effectiveness of policies and programs—cost-benefit and cost-effectiveness analyses—are explained. Types of costs and benefits to be considered are discussed in detail. Advantages and disadvantages of the various ways of applying these approaches are also discussed.

EFFICIENCY OF A TRANSFORMATION PROCESS

The concept of efficiency applies to a transformation process that goes on in a system. A system is a unit formed of many diverse parts that are subject to a common plan or that serve a common purpose. A system takes an input, or inputs, which it transforms into an output, or outputs.

The efficiency of an educational process is the efficiency of the transformation process that goes on in a school system. The school system is composed of administrators, teachers, buildings, and equipment, etc. These parts are combined and directed by economic and social rules. The common purpose that unites these parts is the education of students to achieve educational goals. The student (input) enters the school system, from which he later graduates or drops out. His achievement and the success of the school system as a transformation process influences the economy and society at large.

In a given school system, efficiency is the relationship between what is actually achieved (actual output) and what could be achieved with the economic resources available (potential output). Conversely, inefficiency can be defined by the difference between what can be achieved and what actually is achieved. (Efficiency and inefficiency are always relative terms.)

For instance, a one-room rural school in a developing country that serves four grades simultaneously and produces few graduates may not be as inefficient as it looks. If it is impossible to produce more output, quantitatively and/or qualitatively, with the same type of student and economic resources available to the system, such a system is efficient.

Reasons for Inefficiency

These reasons can be grouped in two major areas: inefficiency of operations, and inefficiency of decision-making.

Inefficiency of Operations This type of inefficiency occurs when members of the system do not contribute their best potential to the transformation process. In two classes with the same type of teacher, number and type of students, materials, etc., if one class scores higher in tests, it is more efficient. If in the same class, the same type of student scores higher at one time than another, the inefficiency exists at the time of the lower score.

The basic question here is: If systems are similar, why do results differ? Systems can be similar and yet not exactly the same. Some of the system's members may be different and these differences are hard to account for. There are different intangible elements—attitudes, motivation, cultural heritage—and more tangible aspects, such as incentives for students and teachers which lead to differences in performance.

Inefficiency of Decision-Making Given the knowledge available to the system about different transformation processes that provide the same type of output, and about different transformation processes that provide different types of outputs, an inefficiency in decision-making occurs when choices between processes are not based on a priori criteria of efficiency. Selecting from different combinations of teachers and training machines the most appropriate one to provide mastery of a foreign language involves choosing between alternative processes to provide the same output. Deciding what combination of teachers and equipment will prepare students to become theoretical physicists rather than engineers would involve the problem of choice of a transformation process to provide different outputs.

The a priori criterion of efficiency for choosing a process to produce a given output is to minimize the costs, implicit and explicit, of producing a given output. When decisions are made which ignore this criterion, an economic inefficiency of choice occurs.

Take the previous example of teachers and teaching machines where two processes produce the same result. One employs four units of teacher time and two units of machine time, the other employs two units of teacher time and four units of machine time. The price of a teaching time unit is $8 and the price of a machine time unit is $3. Since results are the same, the second combination, which costs $28, should be chosen over the first combination, which costs $38.

The a priori criterion of economic efficiency for choosing an output is to choose processes that maximize the economic value of output within a given budget. Decisions which ignore this criterion lead to another economic inefficiency in decision-making.

If different combinations of teachers and equipment costing the same produce either engineering graduates or graduates in theoretical physics, the efficiency of the process chosen depends on how an engineer is valued economically in comparison with a physicist. If engineers are more valued, then producing many physicists is inefficient.

It should be noted that in accordance with economic efficiency criteria, decisions should vary with changes in either prices of the components of the process or in the valuation of its outputs. So a decision that once was efficient by then prevailing prices of components or outputs may become inefficient with changed prices.

It is also important to realize that non-economic criteria—political, cultural and, familial—can be a basis for judging efficiency. These criteria only affect the choice of a given type of output but not the criterion of minimization of costs to produce a particular output. If the criterion of efficiency is political, processes chosen should maximize political benefits. In the previous example of choosing between machines and teachers, undoubtedly job patronage yields more political benefits and the method using more teachers should be chosen. Again, politically it might be more efficient and beneficial to train graduates faithful to the political party in power, even though other graduates may be more efficient economically. In actuality, people seldom apply one "pure" criterion of efficiency. Economic criteria, such as minimization of costs, for providing education may be limited by political criteria, such as employing a certain number of teachers and administrators who belong to a given political party. In addition, political criteria may be limited by family loyalty, and so on. Analysis of efficiency cannot ignore such factors.

In summary, inefficiency of operations results from unwillingness or inability to apply one's full capacity in the service of the transformation process because of lack of motivation, poor attitudes, conflict between goals of the individual and the institution, etc. All these contribute differences between what could be obtained with a given process and what actually is obtained.

Inefficiency of decision-making results from selecting a process that does not minimize production costs, or selecting a process that produces an output which a criterion of efficiency indicates is wrong.

Besides these inefficiencies, there are inefficiencie that are combinations of the above, such as inefficiency of operations combined with the choice of the wrong process to produce the wrong output, or inefficiency of choice of process and output.

The Sources of Inefficiency

Once inefficencies are found, it is important to determine their cause and who or what is responsible for them. To do this, the system being scrutinized must be defined in terms of boundaries, environment, knowledge, and time.

The criteria for an educational system's boundaries—geographical, institutional, legal, organizational, etc.—are varied. Boundaries affect the efficiency of decision-making and determine responsibility for decision-making. For example, if a high school is told to graduate a certain number of students in vocational subjects, and the high school does this at the lowest possible cost, and the graduates do not find jobs, that high school —whose boundaries do not include the decision-making process that determines the type of graduate—cannot be held accountable for the inefficient decision-making in choice of output. If boundaries of the school expand to include the decision-making process on the type of graduate, and the high school still produces the wrong output, then there is an inefficiency, and the school is responsible.

The environment in which the system operates should also be specified. Environment is the sum of external conditions and influences that affect the functioning of the system. This definition of environment does not necessarily imply physical proximity. When dealing with elementary schooling, the environment may be a neighborhood. With a university, it may be the nation or even the international scientific community.

The results of a transformation process, operating on given outputs in a particular system, vary as the environment changes. A school operating in a peaceful environment produces a higher output than the same school operating in a violent one. An environment with attitudes hostile to learning will adversely affect the output of a system. An authoritative and intimidating environment will inhibit innovations.

Not only are a system's operations influenced by the environment, but also the system affects the environment to the extent that its output becomes part of the environment.

A process that goes on in a system where there is human activity depends on knowledge. Nature has many systems of transformation processes —plants and organisms grow without human intervention. But the moment a person fertilizes the soil or harvests fruits, he introduces human knowledge into the natural system. The reason for organizing a system, the way the system is organized to transform a given input into desired outputs, and the way it adapts to changing conditions—these all depend on the knowledge available to the system's members. When the knowledge available to the members of the system is inadequate or the data on which they base decisions are faulty, inefficiencies will certainly result.

All transformation processes require time. The analysis of a process must allow for the time necessary to complete the process. Time is especially important in the educational transformation process because this process is generally superimposed on the human growth process.

Alleviating Inefficiencies

The inefficiencies of a process can be alleviated through intervening to increase knowledge and to change the boundaries of the process and the environment.

Increasing Knowledge Here knowledge is classified into two major types:

—*Skilled Knowledge:* the way to do things

—*Informational Knowledge:* having the facts and the understanding of them necessary to make the right decisions or to initiate actions.

How to make a choice between alternatives is part of skilled knowledge. The number of alternatives available or data on which technical knowledge is based is informational knowledge.

Skilled knowledge is acquired through education and experience. The way things are done at present is learned. At a higher level, knowledge leads to solving new problems by creating *new* ways to do things. This knowledge usually results from intuition which leads to research and experimentation.

For a teacher, operational knowledge may be the knowledge needed to teach effectively in a classroom. This can be acquired in a teacher's college, or through a teacher apprenticeship program.

Informational knowledge depends on generating information and conveying it. For an administrator, informational knowledge may be determining the optimal number of students in the educational system. These data have to be generated, most probably, by members of the process, and then transmitted to the administrator.

More operational knowledge is always good. If it can be applied, it decreases inefficiency. More informational knowledge does not necessarily increase efficiency because the quality of informational knowledge has to match quantity. If data generated are faulty, a larger amount of such data causes greater inefficiency of choice. Similarly, if the information system that transmits the data is faulty, a larger system without improved quality of transmission may also cause greater inefficiency. Even an improvement in the information system—if the generation of data is faulty—may actually worsen the overall efficiency of choice. But, generally, an improvement in the quality of knowledge generated improves the efficiency of choice.

Changing the Boundaries of a Process Sometimes, inefficiencies of choice of a process are decreased by changing its boundaries. Existing processes can be merged. Different schools can be consolidated or a regional school can decide its own curriculum rather than accept it as formulated by higher authorities. Changing the boundaries may also mean breaking up larger processes into smaller independent ones. The issue of centralization versus decentralization falls under the category of changing boundaries.

Changing the Environment Processes are affected by the environment and, in turn, affect it. The output of a process can be changed by intervening in the environment. The environment mainly affects the inefficiency of operations. One way to improve this kind of inefficiency is to affect the incentives of the members of the process. The value that society places on the teaching profession compared with other professions, the teacher's freedom of self-expression, the attitudes of parents and children, the way the whole economic and social system outside the process operates—all these affect operational efficiency. If these are changed, the efficiency of the process can be changed.

Summary of Efficiency Concepts

The concept of efficiency in education applies to a transformation process that goes on in an educational system—its goals, components, and knowledge. This system is limited by the boundaries of its own process and it is surrounded by an environment.

The system with a given budget receives an input, the student. Its transformation process acts upon the inputs over a span of time and converts them into outputs. (Fig. 1)

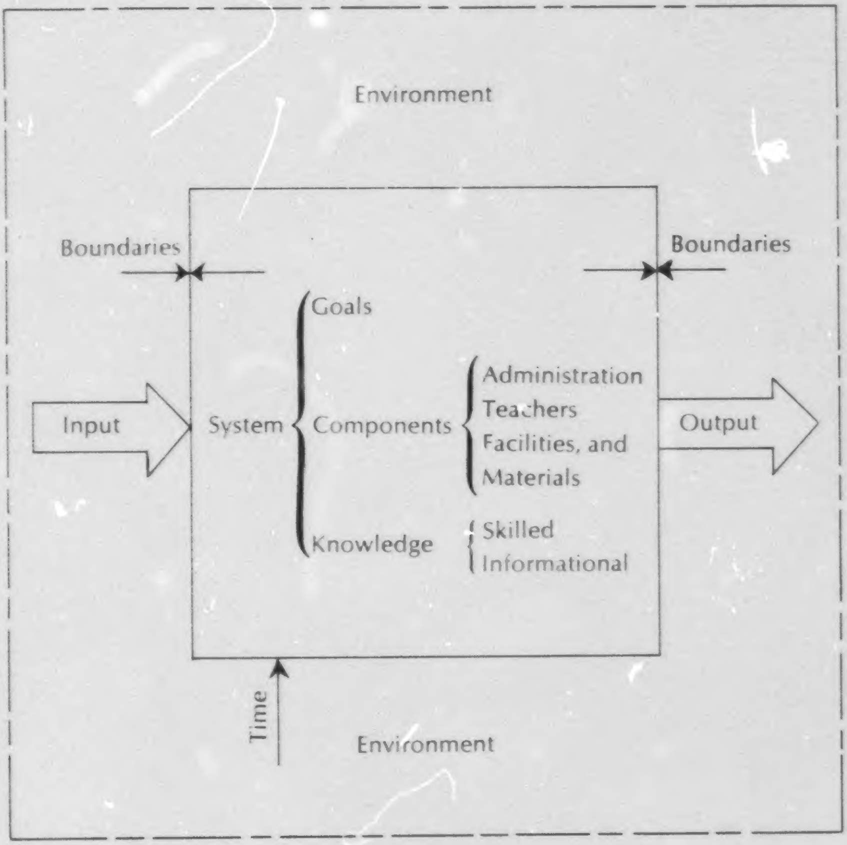

Environment
Boundaries
Boundaries
Goals
Input
System
Components
Administration
Teachers
Facilities, and
Materials
Output
Knowledge
Skilled
Informational
Time
Environment

Figure 1

Inefficiencies in the system exist when the outputs are less than what could be obtained with the same budget. They result from inefficiency of operations and inefficiency of decision-making.

These inefficiencies can be alleviated by increasing knowledge of the system and by changing the boundaries and environment. (Fig. 2)

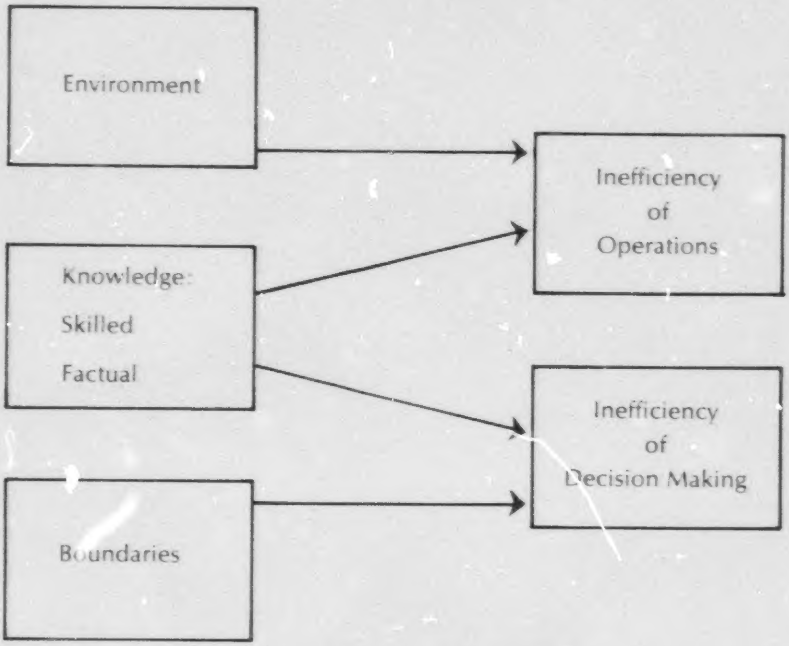

Environment
Knowledge:
Skilled
Factual
Boundaries
Inefficiency of Operations
Inefficiency of Decision Making

Figure 2

INCREASING EFFICIENCY

Increasing efficiency through intervention in a system always involves costs. Making an existing system into a different one by increasing knowledge, changing boundaries and environments, not only requires expending extra resources but also threatens those who benefit from the status quo. A decision to intervene and change the system must be based on a comparison of benefits and costs of intervention. The use of two analytic tools—cost-benefit and cost-effectiveness analyses—leads to a productive decision.

Cost-Benefit Analysis

Cost-benefit analysis compares monetary benefits with the costs of carrying out the program. In the early 20th century, cost-benefit analysis, which had reached a high level of sophistication, was used to determine the profitability of canal construction. Later, river-basin and water resource development decisions were based on cost-benefit analysis. Since the Second World War, it has been applied to a variety of economic and social investments in developed as well as in developing countries.

Cost-benefit analysis involves three major areas: measuring or estimating costs; measuring or estimating benefits; and applying a criterion—such as maximizing the ratio of benefits to costs—and choosing the preferred course of action.

Costs to be Considered in Cost-Benefit Analysis

There are four general types of costs to be considered here: marginal costs; external or spillover costs; opportunity costs; and shadow prices. (For definitions of specific types of costs, see pp. 201-202.)

Marginal Costs

Only the extra cost of a new course of action should be considered. No matter what course is taken, the fixed costs already incurred will not enter into consideration. But average costs might differ sharply from marginal costs. A decision between building two schools, one for $100,000, holding 500 students, the other for $120,000, accommodating 700 students, involves determining if an extra capacity of 200 students is worth an additional $20,000.

External or Spillover Costs

Costs must include not only direct costs of a program but also "external costs." These are costs imposed by the program on people or a part of society outside the boundaries of the program. If a program requires the services of teachers with particular qualifications who are already in scarce supply or requires special or additional teacher training, these costs should be included in total costs. If a new program of agricultural science education attracts teachers from graduates trained as agricultural extension agents, the cost of training more extension agents should be included when making a cost-benefit analysis of a national program.

Opportunity Costs

Because every course of action or every program excludes other programs or other courses of action, opportunity costs (that is, the foregone benefits of not choosing another course of action) should be considered in any cost-benefit analysis. Measuring costs of education should include the "opportunity costs" of the student's time—the income foregone by the student while studying—in addition to costs of providing the education. In calculating the cost of school buildings, the accounting concept would use amortization. The opportunity cost concept would use the interest on the sale value of the facility or its rental value, whichever is higher.

Shadow Prices

Opportunity costs of production factors in the economy or the cost of programs depend on what quantity of different components is used and on their prices. Prices are given data in most cases. Prices of personnel, services, and buildings are data a school administrator must base decisions on. But for the entire economic system, actual prices need not be taken as given data. Decisions do not have to be guided totally by market prices which may not reflect an economy's scarcities, or which may reflect only monopolistic practices. Under these circumstances, maximizing the GNP requires using the factors of production according to their opportunity cost. Using these "shadow prices" disregards the actual cost according to market prices. Therefore, in cost-benefit analysis, the costs of national programs should not be measured by actual or accounting costs.

For example, a Ministry of Education is considering Educational Television (ETV) for teaching science and has the following alternatives:

Alternative A—Introduction of ETV

Costs of equipment and programming	$5,000,000
Interest rate on loan	5%/year
Variable teaching costs	100 pesos/student year
Official exchange rate	10 pesos/dollar

Alternative B—Local Retraining of Science Teachers

Training of teachers	10,000,000 pesos
Local interest rate	7%/year
Variable teaching costs	300 pesos/student year
Students	10,000

The total yearly costs of A would be:

5,000,000 dollars × .05 × 10 pesos/dollar + 10,000 students × 100 pesos/student = 3,500,000 pesos.

The total yearly costs of B would be:

10,000,000 pesos × .07 + 300 pesos/student × 10,000 students = 3,700,000 pesos.

Therefore, according to this analysis, ETV should be chosen. This would be a good decision as long as teachers' salaries and the current foreign exchange rates are at optimum prices in a general economic context.

But if the "real" exchange rate or the "shadow" exchange rate is 15 pesos/dollar, then Alternative A would cost

5,000,000 × .05 × 15 + 10,000 × 100 = 4,750,000 pesos.

If the "shadow" wages—opportunity costs of teachers in the economy—is only half of actual wages, then Alternative A would cost

5,000,000 × .05 × 15 + 10,000 × 100/2 = 4,250,000 pesos.

and Alternative B would cost

10,000,000 × .07 + 300/2 × 10,000 = 2,200,000 pesos.

In either case, the choice of Alternative A would not be efficient for the entire economy.

Benefits to Be Included in Cost-Benefit Analysis

There are two types of benefits to be considered: direct, and indirect or external benefits.

Direct Benefits

Direct benefits of a program that can be measured in money should be included. The benefits of vocational training programs are the difference between what the student would earn without the training and what he will earn with it.

Many direct benefits cannot be expressed monetarily. The value of general education is very difficult to measure this way. Very often these non-quantifiable benefits are only noted, and not included in the calculations.

Indirect or External Benefits

Benefits accruing to persons other than those directly involved in a program should also be included in cost-benefit analysis, when quantifiable. If training programs for dropouts not only increase earnings but also reduce social costs, such as public assistance payments to the unemployed or costs resulting from crime, then these savings in social costs should be included as benefits.

Benefits, Costs, and Time

To compare benefits and costs over time, it is important to determine their present value.

Present Value of Future Benefits

The economic benefits of schooling are lifelong. How can these economic benefits be evaluated in the present? If a person or institution states exactly how much he or it is willing to pay now to receive higher income later on, this amount is the discounted present value of a future income. How much will a person offer now to get a dollar a year from now? Usually, it is less than a dollar. Why give up a dollar now to get a dollar a year later?

To find out how much money should be offered, there is a simple question, common to most people: "How much will a dollar deposited in a savings bank be worth in a year, two years, or any number of years from now?" Suppose the bank pays five per cent interest per year. Then the first year, the dollar will earn \$.05. Compounded at this rate, the dollar will be worth \$1.1025 after two years, and so on. The value in the first year can be expressed as

$$1 + 1(.05) = 1.05.$$

The second year, it is

$$1.05 + 1.05(.05) = 1.1025 \text{ or } 1(1 + .05)^2.$$

If A is the initial amount deposited and r is the rate of interest, then the value of A after two years is determined by

$$A_2 = A(1 + r)^2.$$

At the end of n years, the value of A_n is determined by

$$A_n = A(1 + r)^n.$$

To determine what the present discounted value of future income is, look at the above in reverse. How much is a deposit worth now that will yield $1.05 in a year at five per cent interest? That is, how much must be deposited now at five per cent to earn $1.05 a year from now? This can be determined as follows:

$$\frac{1.05}{1 + .05} = 1.$$

The $1.1025 that will accrue two years from now is worth only a dollar today, as shown by the following equation:

$$\frac{1.1025}{(1 + .05)^2} = 1.$$

If

$$A_n = A(1 + r)^n,$$

then the present value of

$$A = \frac{A_n}{(1 + r)^n}. \tag{1}$$

Suppose an investor plans to invest an amount that will yield the following returns: A_1 the first year, A_2 the second year, A_3 the third year, and so on. What is the present value of these future incomes? If the interest rate is r, the present discounted value may be determined by an expansion of formula (1), shown below:

$$A = \frac{A_1}{(1 + r)} + \frac{A_2}{(1 + r)^2} + \frac{A_3}{(1 + 2)^3} + \ldots + \frac{A_n}{(1 + r)^n}. \tag{2}$$

Suppose an investment is expected to yield the following income over four years:

Year: 1	none
2	$400.00
3	$900.00
4	$1000.00

and the interest rate is five per cent a year. The present value of the investment using formula (2) could be calculated as follows:

$$A = \frac{0}{1.05} + \frac{400}{(1.05)^2} + \frac{900}{(1.05)^3} + \frac{1000}{(1.05)^4}$$

$$= 0 + \frac{400}{1.1025} + \frac{900}{1.1576} + \frac{1000}{1.2155}$$

$$= 0 + 363 + 776 + 738.$$

Thus, the present value of an investment that will yield the above incomes over four years is $1877.

Present Value of Past Costs

The same analysis applies to past costs evaluated in the present. If the cost of educating an engineer is incurred over four years, what is the total cost at the end of the four years?

The first year expenditure will be the amount spent in the first year, plus the interest that this amount would have earned during the next four years (assuming that the expenditure is made at the beginning of the year). This can be expressed by the formula

$$C_1 = C_{01} (1 + r)^4$$

where C_1 = cost at the end of the four-year period of expenditures incurred the first year and C_{01} = cost incurred for the first year at the beginning of the year.

For the second year, the cost is the amount spent in the second year, plus the interest earned over three years:

$$C_2 = C_{02} (1 + r)^3$$

and so on.

The total cost (C_T) at the end of four years is determined by:

$$C_T = C_{01} (1 + r)^4 + C_{02} (1 + r)^3 + C_{03} (1 + r)^2 + C_{04} (1 + r).$$

If costs for the first year of schooling are $800; for the second year, $900; for the third year, $1,000; and for the fourth year, $1,100; and the rate of interest on a student loan is ten per cent a year, the total costs would be calculated as follows:

$$C_T = 800\,(1 + .1)^4 + 900\,(1 + .1)^3 + 1{,}000\,(1 + .1)^2 + 1{,}100\,(1 + .1).$$

Thus, total costs at the end of four years of schooling are $4787.40.

The Choice of a Criterion

Assume that costs and benefits have been measured accurately and completely (including indirect effects) and that appropriate discounting procedures have determined the present values of costs and benefits. What is the criterion by which projects are accepted or rejected? For simple projects, if benefits less costs are greater than zero $(B - C > 0)$, the project will at least break even. But if comparisons between projects are desired, the difference between benefits and costs will not be an adequate criterion. If breaking even is the criterion, large, marginally efficient projects would be chosen over small, highly efficient ones.

Comparison of relative efficiency can be made by using a cost-benefit ratio criterion. The discounted present value is divided by the present value of costs and, if the result is greater than one, the project is acceptable $(\frac{B}{C} > 1)$. Selections can also be made from among a group of projects on the basis of the ratios, disregarding the project's scale. Projects with higher B/C ratios are more desirable.

Both these criteria are often used. But there is still another criterion that is superior for some purposes. Discounting future benefits to present value significantly alters benefits, depending on the discount rates used. Thus, different projects will be chosen, depending on what discount rate is used. A criterion that eliminates the problem of such choices in some cases is the internal rate of return.

The Internal Rate of Return on Investments

The present value of future income (discounted at some interest rate) can be determined and then compared with present cost. But the internal rate of return can also be determined and then compared with the prevailing interest rate. If an investor receives a five per cent return from his investment when the bank is paying six per cent interest, then it will be more profitable to lend out his money at the bank rate than to invest it.

To clarify what the internal rate of return means, consider evaluating the purchase of two securities, both selling for $1000. Security A is expected to pay $1150 at the end of two years. Security B is expected to pay $1200 at the end of three years. The market interest rate is five per cent. According to formula (1), the present value of Security A can be calculated as follows:

$$A_x = \frac{A_n}{(1 + r)^n} = \frac{1150}{(1 + .05)^2} = \frac{1150}{(1.05)^2} = \$1043.$$

The present value of Security B is calculated similarly:

$$A_B = \frac{A_n}{(1 + r)^n} = \frac{1200}{(1 + .05)^3} = \frac{1200}{(1.05)^3} = \$1035.$$

Thus, for both securities, the present value exceeds present cost and Security A is the more profitable.

Alternatively, the two investments can be compared on the basis of their internal rates of return. This comparison will determine if any security provides a higher rate of return than the market interest rate and will show which security yields the higher rate. The same formula is used, with the present value for A given, but it is solved for r; that is, for the present value of A, substitute the security's cost and solve for r. Calculations for both securities follow:

Security A:

$$\begin{aligned} A_A &= \frac{A_n}{(1 + r)^n} \\ 1000 &= \frac{1150}{(1 + r)^2} \\ 1.15 &= (1 + r)^2 \\ \sqrt{1.15} &= 1 + r \\ 1.07 &= 1 + r \\ 1.07 - 1.00 &= r \\ .07 &= r \end{aligned}$$

Security B:

$$\begin{aligned} A_B &= \frac{A_n}{(1 + r)^n} \\ 1000 &= \frac{1200}{(1 + r)^3} \\ 1.2 &= (1 + r)^3 \\ \sqrt[3]{1.2} &= 1 + r \\ 1.06 &= 1 + r \\ 1.06 - 1.00 &= r \\ .06 &= r \end{aligned}$$

Thus, Security A provides a seven per cent rate of return and Security B provides a six per cent rate of return.

Calculating the rate of return is not always as simple as the above. In this case, a lump sum was expected after a certain number of years. When the future receipts vary over a period of years, the same formula, formula (2), can be used:

$$A = \frac{A_1}{(1+r)} + \frac{A_2}{(1+r)^2} + \cdots + \frac{A_n}{(1+r)^n}$$

A, A_1, A_2, etc. are given and the problem is to determine r, the rate of return. But there is no easy solution, except to estimate r by trying various values for it that will make the equation work. If $1 + r$ is constant, and it is assumed that $r = .05$; then $1 + r$ will be 1.05. Square the equation for the second year, cube it for the third, etc. In some cases, tables of present values may make estimations more convenient.

To see how r is estimated in this case, assume the cost of the asset is \$1500 and the estimated income for an investment over a four-year period is:

Year:	1	None
	2	\$400.00
	3	\$900.00
	4	\$1000.00

Then,

$$\$1500 = 0 + \frac{400}{(1+r)^2} + \frac{900}{(1+r)^3} + \frac{1000}{(1+r)^4}.$$

Taking eight per cent as an experimental r yields:

$$0 + \frac{400}{(1.08)^2} + \frac{900}{(1.08)^3} + \frac{1000}{(1.08)^4} = \$1792.$$

Since the result is greater than \$1500, a higher rate of discount should be tried. The following table summarizes these calculations.

Year	*Income*	*Present Values at Different Assumed Rates of Return*				
		6%	8%	10%	13%	14%
1	\$ 0	0	0	0	0	0
2	400	357	342	331	313	308
3	900	756	714	677	611	608
4	1000	793	736	679	613	592
		A6 = 1906	A8 = 1792	A10 = 1687	A13 = 1537	A14 = 1508

The rate of return that verifies the equation is approximately 14 per cent. This rate was arrived at by trying different rates until the present discounted value of future incomes equalled or approximated the cost of the investment.

In summary, the internal rate of return is the annual percentage rate of discount that equates the present value of lifetime benefits resulting from an investment with the costs of the investment. Instead of choosing a discount rate arbitrarily to compare the excess of benefits over costs, this criterion uses the data on costs and benefits to determine a discount rate or rate of return. The higher this "internal rate of return," the better the project. Comparisons between projects based on their internal rates of return are valid, regardless of the project's scale and regardless of any arbitrary choice of discount rate.

A Modified Cost-Benefit Analysis

Many benefits in education cannot be quantified in money. It is useful to adjust the methodology to include non-monetary benefits. The non-monetary benefits can then be appraised in terms of their costs and compared with other expenditures on non-marketable goods. This can be represented symbolically as:

$B_t = B_p + B_{np}$

$B_{np} = C_t - B_p$

B_t = total benefits

B_p = pecuniary benefits

B_{np} = non-pecuniary benefits

C_t = total costs.

If the monetary benefits for a pre-school education of a child, as measured by employment opportunity of the mother, are \$100 and the costs, \$150, the non-monetary benefits—such as the well-being of the child and the happiness of the mother—can be said to cost \$50. This imputed cost for non-monetary benefits can be compared with similar expenditures for other non-marketable goods, such as the provision of parks, cleaner air or public entertainment.

Summary of Cost-Benefit Analysis

Macro-level applications of cost-benefit analysis may offer useful guides to policy and sectoral strategy. But they are too general for detailed decisions on the best design of projects within the various education levels.

Cost-benefit analysis may be very useful at the macro-level, if applied with care and sophistication.

As discussed above, cost-benefit analysis is complex. Decision-makers should weigh the cost of making a cost-benefit study against the benefits of the information. There are many possibilities of errors and omissions. Decision-makers should avoid taking the findings of cost-benefit analysis as absolute indicators of the worth of projects. Cost-benefit analyses may add to available information. They do not reveal unequivocal, "right" answers.

Cost-Effectiveness Analysis

Cost-effectiveness analysis has a broader scope than cost-benefit analysis which compares only monetary values. Cost-effectiveness analysis relates non-monetary benefits to monetary costs. It does this by measuring how effectively a specific program meets its objectives.

Cost-effectiveness analysis measures two aspects of a program: economy and efficiency.

Program Economy as Measured by Cost-Effectiveness Quantitative goals are set, then costs of different alternatives are compared. The less costly alternative is the better one.

Program Efficiency as Measured by Cost-Effectiveness With a fixed budget, different alternatives are compared. Levels of effectiveness are determined, though these are not stated in terms of money. The alternative with greater effectiveness yields more output and is better.

When alternatives differ in both costs and effectiveness, there is no definitive basis of comparison. A common fallacy is to choose an alternative that minimizes the cost-effectiveness ratio. Assume that Alternative A raises reading scores from 500 to 600 and costs $10,000. Alternative B raises scores from 500 to 540 and costs $5,000. The cost-effectiveness ratio for A is $10,000/100 = $100/unit score. The cost-effectiveness ratio for B is $5,000/540 = $125/unit score. Here the analysis does not indicate that Alternative A should be chosen because the cost-effectiveness per unit is lower. Rather, the decision-maker should ask if an extra 60 units is worth an increased expenditure of $5,000. Cost-effectiveness analysis works best for lower level decisions because it focuses on specific program alternatives. It helps the optimal allocation of the resources of a fixed budget to different programs.

The range of alternatives compared sometimes presents problems. The wider the range of alternatives or the greater the degree of innovativeness involved, the more likely it is that there will be differences between alternatives in terms of both outputs and indirect effects, which are usually referred to as "external costs and benefits."

The usefulness of cost-effectiveness analysis depends on the appropriate measurements of effectiveness. These are influenced by the values attached to program alternatives. Parents, teachers, political leaders all have different sets of values. Instruments for measuring effectiveness may not reflect them all.

Multiple objectives call for multi-dimensional measures of effectiveness. This does not make the analysis impossible, but it does make the results more dependent on the value judgment of the decision-maker. Also, the multiple benefits of more complex objectives greatly complicates comparison.

Consider two projects, alike in every way including costs, except for the "mix" of benefits they produce:

Benefits	*Units of Output*	
	Project A	*Project B*
x	3	2
y	1	3
z	2	1

Which should be chosen? If x, y, z are expressed in monetary terms, benefits can simply be summed. But the simple answer of the cost-benefit approach eludes us when benefits x, y, z cannot be valued objectively in relationship to each other. Suppose benefit x represents the number of secondary school graduates, y the quality of their education, and z the project's satisfying of social and political demand for more secondary education. Analyzing the units of output of these benefits indicates that Project A's program produces many graduates, sacrificing quality but satisfying more social demand than its alternative. Project B has a lower level of output, increasing quality but satisfying social demand less. Here the relationship [or "trade-off ratio"] between benefits is far from clear, and the decision will again depend on the value judgment of the decision-maker.

Nevertheless, cost-effectiveness analysis can be very useful because it makes explicit the subjective valuation of the benefits. For instance, compare two manpower training programs: one a formal vocational education program, the other a work-study program involving both formal workshop training and working in a manufacturing enterprise. Both programs are to graduate an equal number of adequately skilled machinists (N). The criteria for evaluation are: the costs per graduate; the quality of training, indicated by curriculum analysis and by employers' acceptance and appraisal of the graduates; and the probability of graduates' finding employment. Information on quality will be obtained from interviews with the graduates' potential employers. The probability of finding employment can be estimated through studies of employment results from similar programs and also through interviews with potential employers. The following table contains the "data" that provide the basis for the analysis.

Factor of Comparison	*Alternative A: Traditional Vocational School*	*Alternative B: Work-Study Program*
Duration of course (D)	24 months	18 months
Number of graduates (N)	300	300
Capital costs per student place per month (amortization plus interest)	\$50	\$40
Recurrent costs per student place per month	\$60	\$50
Employers' evaluation of quality of training (Q)	$q_A = .9$	$q_B = .8$
Placement probability	$p_A = .8$	$p_B = .7$

From these data, the cost equation can be determined:

$$C = (k + c)(D)(N)$$

where

C = cost
k = capital costs per student per month
c = recurrent costs per student per month
D = duration of training
N = number of graduates.

For Alternative A,

$C_A = (50 + 60) \times 24 \times 300 =$ \$792,000 or \$2,640 per graduate.

For Alternative B,

$C_B = (40 + 50) \times 18 \times 300 =$ \$486,000 or \$1,620 per graduate.

The criteria for choosing one alternative include not only cost but also qualitative evaluation of training, and the probability of graduates finding employment. To compare the two alternatives' effectiveness, the cost per graduate must account for these factors: The overall criterion is the cost per graduate of highest quality ($q = 1.0$), who is actually employed ($p = 1.0$); that is, $\frac{C}{N} \times \frac{1}{p} \times \frac{1}{q}$, or $\frac{C}{N_{pq}}$. Thus, the final costs of a fully effective graduate in each program can be calculated as follows:

$$\text{Alternative A} = \frac{2640}{.8 \times .9} = 3667.$$

$$\text{Alternative B} = \frac{1620}{.7 \times .8} = 2892.$$

Alternative B is, thus, the better choice.

Without great difficulty, the same data could indicate which alternative would produce the greatest number of qualified graduates (greatest effectiveness) for a given level of expenditures.

Despite its simplifying assumptions, the example shows how necessary the quantifications of subjective evaluations are—in this case, the quantification of the quality of the graduate.

The example also shows how sensitive the conclusions may be to different values of the intangibles. If the evaluation of quality of a graduate of B were to go down from .8 to .6, the costs of a fully-effective, employed graduate would decrease and the comparison would become:

$$\text{Alternative A} = 3667$$

$$\text{Alternative B} = \frac{1620}{.7 \times .6} = 3857.$$

Alternative A would then be recommended.

In summary, cost-effectiveness analysis is a useful instrument to help decision-makers in education. It is broader than cost-benefit analysis because it incorporates non-monetary benefits. However, much care has to be exercised when measuring effectiveness, especially in the cases of multiple objectives and multiple benefits. Although subjectivity plays an important role in these cases, cost-effectiveness compels the analyst to make these multiple objectives and benefits explicit.

Definitions of Special Terms Used in This Chapter

Economic Costs

Costs can mean different things: to comptrollers, costs are for legal and auditing purposes; to executives, cost classifications may be designed to provide decision-making guidelines.

Outlay Costs and Opportunity Costs

Outlay costs are actual financial expenditures. Entered in accounting records, they include actual expenses for teachers, buildings, materials, etc.

Opportunity costs are "advantages" foregone in taking one course of action instead of another—what is given up in making a choice. They represent the hypothetical cost of an action and cannot be recorded. But they must be accounted for in decision-making because overlooking opportunity costs may well cause faulty decision-making. A student might compare tuition costs with the projected increase in future earnings. But he should also add to these costs the earnings foregone during his years in school. These earnings are opportunity costs. Generally, they apply to all situations with alternative uses of resources. A school administrator must consider opportunity costs associated with the possible activities of a newly hired teacher. The opportunity cost of a teacher supervising lunch hour is classroom time.

It is difficult to consider all possible opportunity costs. But it is extremely important to analyze not only what is being done or what has been done but also to weigh the opportunity costs of new alternatives.

Explicit Costs and Implicit Costs

Explicit costs are all expenses incurred during the educational process. Implicit costs are usually not quantifiable and do not appear as expenses in the different accounts, but at times they strongly influence decision-making. Resentment is the implicit cost of blocking teacher raises, with a probable decrease of productivity. The implicit cost of an unpopular decision may be political upheaval.

Historical and Future Costs

All past costs are recorded as historical costs and are, generally, used in planning. But historical costs may not indicate future cost trends when the prices of buildings, teachers' salaries, and price of other inputs change drastically. Forecasting of future costs may not be based entirely on historical costs.

Standard Costs

These are unit costs (costs per student, classroom, teacher, etc.) that provide a norm against which comparisons can be made. When actual expenditures differ from this norm, this difference can provide a measure for evaluation of efficiency. Standard costs can be adjusted to reflect regional, curricular, size, and other differences.

Capital and Recurrent Costs

Capital costs are expenditures "consumed" over a long period of time—

buildings, machinery, land, etc. Generally, they are "lumpy investments." Recurrent costs (or sometimes "current costs") refer to expenditures of a fiscal period—teacher and administrator salaries, materials, and maintenance.

Controllable and Uncontrollable Costs

This classification helps determine responsibility of control over expenditures. If 90 per cent of a school administrator's budget is pre-determined for teachers and their salaries, he controls only ten per cent of it and should be accountable only for this small segment of the budget.

Direct and Indirect Costs

Direct costs are traceable to a unit of the process or output. Indirect costs (also called, "joint costs" or "common costs") are those that cannot be assigned to a single process or output. The direct classroom costs are the teacher's salary, cost of the building, materials, etc. Indirect costs include cost for administration, common buildings, care of grounds and so on.

Fixed and Variable Costs

These costs refer to a system with a given, fixed capacity. Fixed costs do not vary with the output; variable costs do. Fixed costs of a school include maintenance, interest payments, if the building was built with a loan, administrative costs, etc. Variable costs include teachers' salaries, if the number of teachers varies with different enrollments; materials used by the students, etc.

Obviously, the distinction between fixed and variable costs will vary with the size of the system. Administration costs may be fixed for a particular school, but they become variable when considered part of an entire region. There are subtle differences: building depreciation if part of a pre-determined schedule, such as straight line depreciation, can be considered a fixed cost. The distinction between variable and fixed costs is useful to relate costs to outputs.

Relationship Between Cost and Output

In the case of both fixed and variable costs in an educational system:

Total costs of a given output equal the sum of fixed costs and variable costs of this output.

Average costs for a given output equal total costs of a quantity of output divided by the quantity of units of output.

Marginal cost for a given output equals the extra cost that is incurred by producing an extra unit of output beyond the given output.

CHAPTER XVI

An Evaluation of the Outputs of Education

IMPROVING the educational system's efficiency calls for a clear assessment of the benefits that the improvements bring. These benefits are the increased outputs of the educational system.

Education has two kinds of outputs: those that fulfill stated goals; and those that are the inevitable and unplanned by-products of education.

There may be conflicts between goals. Learning experiences directed toward one goal may develop traits incompatible with another goal. Any evaluation of outputs must consider these potential conflicts.

This chapter provides a framework for evaluating educational outputs. Such a framework is needed to put the different measurements of educational output into an overall perspective. Specific measurements can then determine both the benefits from improvements in an education system and the overall effectiveness of educational policy.

Of particular interest here are methods of evaluating educational outputs. These measure individual learning achievements in cognitive, psychomotor, and affective areas. These achievements, in turn, are measured by standards that indicate the value of attaining goals, and the value of by-products of education to the individual and to society. These evaluations, together with a measurement of cost, provide the basis for cost-benefit and cost-effectiveness analyses.

EDUCATIONAL OUTPUTS RELATED TO STATED GOALS

Societal goals generate instrument goals. These in turn call for process goals. Similarly, where education is the instrument, there are three goal levels: societal, educational, and learning process.

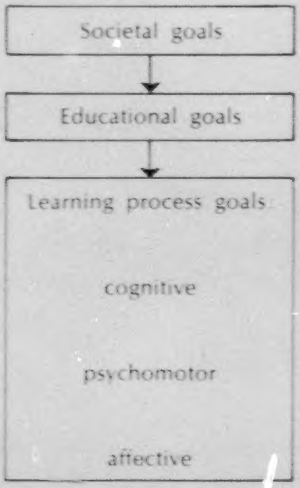
Societal Goals These goals usually express a country's long-range aims. Because they express the aims of diverse groups, societal goals are usually broad and diffuse.

Educational Goals These goals are more specific than societal goals because they are derived from them. Education mostly involves the individual. The community is composed of individuals, some of whom went through the educational process. Educational goals should not be broad statements of purpose. Rather, they should state the characteristics that educated individuals should have.

Learning Process Goals Derived from educational goals, these are the most specific. They seek changes in the cognitive, psychomotor, and affective areas of human capabilities. The cognitive area refers to recall or recognition of knowledge, facts, and information and also to the ability to think rationally. The psychomotor area refers to skills, and the abilities to use sensory knowledge to perform both intellectual and physical acts. The affective area refers to the values, attitudes, feelings, motivations, and desires that condition an individual's behavior. Each of these areas presents different levels of capability which the student must master.

Learning process goals should be distinguished from higher level educational goals. Educational goals seek to establish the characteristics an individual should have. Learning process goals are those of the educational processes that effect change in the individual's characteristics.

The following diagram clarifies the relationship of these goals:



Examples of the Three Goal Levels

Goals common to all societies involve four areas of human activity—economic, social, political, and psychological. Specific history, traditions, customs, social patterns, economic and political systems, and experiences determine a country's societal goals. These, in turn, determine its instrument and process goals. To show the interaction between societal, educational and learning process goals, economic, social, political, and psychological goals will be examined.

Economic Many countries have similar overall economic objectives, such as increased productivity, optimal use of human and natural resources, and an equitable distribution of goods. To achieve these goals, countries are placing more emphasis on education.

Some educational goals are derived from the society's economic goals. A social goal of increased productivity might foster educational goals that instill punctuality, discipline, and industry. The educational process would then initiate goals in the three capability areas to instill these desired characteristics in individuals. In the cognitive area, knowledge of assembly line procedures would foster discipline. In the psychomotor area, dexterity would yield greater efficiency on the job. In the affective area, changes in attitudes on the importance of individual contributions to the country's economy might lead to greater productivity.

Social Despite cultural and political differences, most societies want adequate living standards in health, welfare, and housing. Many societies pursue "social justice." This is achieved through positive interactions between its diverse groups. The nature of the group's relationships depends upon a society's accepted attitudes towards social stratification and mobility. Social tranquility is related to these two social goals and involves respect for law and the continued functioning of society.

Education creates goals based on these societal ones, such as producing socially responsible, moral, and knowledgeable individuals. In turn, the learning process is based on the educational goals. Cognitive and psychomotor skills that achieve better health, nutrition, and communication are important. Affective changes, such as imparting a sense of social responsibility, commitment, morality, and strength of character, would help achieve the educational and societal goals stated above.

Political Despite diverse political institutions, most societies want stable government institutions, non-violent changes in power, and secure international stature. Moreover, many societies promote nationalism, patriotism, and public policies based on specific societal and political needs.

Education helps a society achieve these political goals. Educational goals are directed toward creating effective citizens. Some countries might interpret this as effective decision-making; others, as encouraging docility in serving the state. In any case, an important goal for education is to strengthen the acceptance of national political ideals and values.

Based on stated political goals, the learning process creates learning goals. In the cognitive area, literacy skills might be stressed—in addition to specific knowledge of a country's history. In the psychomotor area, gymnastics and marching could be used to emphasize political identification; speaking skills could be developed for political purposes. Attitudes and behavioral patterns which will promote desired political goals could also be encouraged.

Psychological Structured education probably has its greatest potential impact in this area. Many societies seek some personal fulfillment that deepens their members' humanity. In some societies, personal fulfillment may mean service to the state or the subordination or integration of the self into a stratified national order. In others, personal fulfillment may mean developing its individuals as far as possible within the limits of societal requirements.

In some societies, educational goals might thus promote individual creativity, aesthetic appreciation, morality, and rationality. The learning process, in turn, would develop goals to increase such capabilities. In the cognitive area, knowledge acquired at any age for its own sake would help fulfill the individual. In the psychomotor area, coordination and skills—say, in athletics, dance, and amateur performing groups—that intensify sense perceptions would enhance individual achievement. In the affective area, socially acceptable personal values could be instilled. The table on the following page summarizes examples of each goal level within the substantive areas just discussed.

Goal Conflicts

Goals may be categorized within a framework of specific levels—societal, educational, and learning process—across four areas of a given social system—economic, social, political, and psychological.

To measure outputs against goals, all those changes in capabilities achieved in the effort to fulfill one particular goal should ideally be isolated and measured. But, the intermingling of learning experiences directed toward educational goals makes it difficult to relate acquired capabilities to specific goals. Further, efforts toward diverse goals often conflict. The nature of these conflicts must be recognized in order to devise valid and reliable measurement techniques. Conflicts can exist at each goal level in two ways: within one substantive area, and across all substantive areas.

SELECTED GOALS BY LEVEL

	Economic Objectives	*Social Objectives*	*Political Objectives*	*Psychological Objectives*
Societal Goals:	Production Productivity Optimal use of resources	Adequate standard of living Social justice Social tranquility	Maintenance and stability of government Institutional structures Nationalism, patriotism Promoting public policies responsive to societal needs	Personal fulfillment for every citizen
Educational Goals:	Punctuality Discipline Obedience Adaptability Motivation Industriousness Ambition Competitiveness Organizational ability Managerial skills Acquisitiveness	Social responsibility Morality	Literacy Knowledge Participation as an effective citizen in the government process—either as a person who can make choices or as a docile and accepting person Patriotic spirit	Creativity Aesthetic appreciation Motivation Rationality Adaptability Honesty, strength of character
Learning Process Goals: Cognitive:	An understanding of the country's economic philosophy Knowledge to perform productively	Knowledge related to health, nutrition Development of the legal system	Knowledge of the country's political system and history Literacy skills	Knowledge in any and every field
Psychomotor	Acquiring skills for specific jobs	Communication skills	Communication skills	Sensory and motor skills
Affective:	Accepting values of the country's economic philosophy to create appropriate behavior in individuals	Accepting values of desired social behavior—sharing, carrying out directions, empathy, compassion	Accepting political values related to desired political behavior	Accepting values to promote desired behaviors; emotional control, love, constructive use of leisure time

Goal Conflicts at the Societal Level Few contradictions are likely here because aims are stated broadly and are determined by the same people. A system's economic and political objectives will at least be compatible with, if not support, efforts to achieve most social goals. The most likely area of conflict will occur when personal fulfillment is in some way inhibited or restricted by broader social constraints.

Goal Conflicts at the Educational Level First, there are conflicts in objectives within one substantive area. In the economic area, successfully inducing punctuality, discipline, and obedience can conflict with the qualities of self-motivation, ambition, competitiveness, and acquisitiveness. In the political realm, literacy and knowledge might weaken the individual's willingness to accept national culture and values that conflict with newly-found rational attitudes. In the psychological domain, creativity sometimes requires escape from a rational approach. Also, excessive self-motivation could have negative effects upon moral character and adaptability to change.

The second type of educational goal-level conflict is among substantive areas. The potential conflict relationships are: economic with social, economic with political, economic with psychological, social with political, social with psychological, and political with psychological.

Economic and social goals may conflict. Economic and social understandings, attitudes, and skills may be incompatible. Ambition, acquisitiveness, and competitiveness, all of which can elevate productivity, can also undermine social responsibility or effect static economic power arrangements that minimize social mobility. Excessive ambition, acquisitiveness, and competitiveness by some may interfere with the securing of adequate living standards for all.

Economic and political goals may conflict. Ambition, competitiveness, and acquisitiveness can be used by those with economic power to manipulate individuals' political actions. Political ideology may, in turn, inhibit the application of knowledge and skills to increase economic gains.

Economic and psychological goals may conflict. Managerial economic attitudes of industriousness, ambition, acquisitiveness, competitiveness, and organizational ability theoretically to not conflict with self-motivation, rationality, and creativity. They can, however, weaken morality, honesty, and strength of character; and habits of punctuality, discipline, and obedience may inhibit self-motivation and creativity.

Social and political goals may conflict. Educational goals pursued within social and political areas are less likely to produce conflicts because political institutions implement policies supposedly responsive to social needs.

Social and psychological goals may conflict. Many desirable behavior traits support the goal of social responsibility but self-motivation and creativity may be impeded where social responsibility entails conformity or docility.

Political and psychological goals may conflict. Morality and rationality support the knowledgeable citizen's participation in government by making choices. But they can also give rise to serious reservations toward accepting national values.

Goal Conflicts at the Learning Process Level Within one substantive area, i.e., an economic, social or political area, the usual difficulty at this level comes from improper emphasis on one capability area over the others. Cognitive skills have often been stressed to the exclusion of coordinated, attitudinal and sensory capabilities. For example, knowledge of racial, religious, and cultural differences may still leave a person hostile toward minority groups, if he does not also have corresponding attitudes of tolerance and respect for others.

Learning process goals may also conflict when skills of one substantive area are diametrically opposed to skills of another. The psychological understanding that leads to personal fulfillment often opposes the social understanding of a person's role as a responsible member of society. In the affective realm, a society that restricts experiences in decision-making, effecting choices, and independent thinking, in order to maintain a rigid political system risks destroying the personal initiative needed for intelligent and often crucial economic decisions. In addition, a society that teaches respect and tolerance for diverse cultural values and extremes of cultural independence may fragment its political unity.

The process also affects the student's school career—often a long period of his life. If the student's well-being is an intended process goal, this may sometimes conflict with other more specific goals. For instance, some cognitive skills can be acquired at less cost under rigid disciplinary conditions. But rigidity in an institution's learning approach may be detrimental to the student's happiness and may inhibit his innovative capabilities.

THE BY-PRODUCTS OF EDUCATION

The fulfillment of societal goals creates by-products. Some of these are inevitable side effects of pursuing societal goals; some are unintended outcomes.

There are two prominent, inevitable side effects of education in many societies: the selective and custodial functions. By necessity, those educated are selected, classified, and identified because education is directed to meet economic and social demands, such as occupational training and social tranquility. With demands for more women in the work force, education—especially pre-primary schooling—has taken on a custodial function. In some schools, hours are extended to enable mothers to work.

Concerning unintended by-products of education, providing more years of schooling per student in rural areas may accelerate migration to urban areas. More universal education often raises the formal educational requirements of jobs. It can also create a demand for more education—to keep up with one's neighbors. Another unintended by-product may be the role of education as catalyst in changing society's goals.

Many of these by-products conflict with a country's societal goals. Migration of educated people may conflict with societal policies of well-balanced regional development. Shifting formal educational requirements upward conflicts with minimizing occupational training costs. Some by-products may also interfere with educational goals. The selective function may interfere with the development of creative and knowledgeable students.

METHOD OF EVALUATING EDUCATIONAL OUTPUTS

As stated earlier, a complete evaluation of education must measure two kinds of outputs: those designed to meet goals; and the by-products of the educational process. These outputs can only be quantified by assessing education's effects on the individual. The data for such measurement are individual indicators which reflect specific achievements at the learning process level in the cognitive, psychomotor, and affective areas. Measurements of intelligence, aptitude, attitudes, skill development, and factual knowledge are individual indicators.

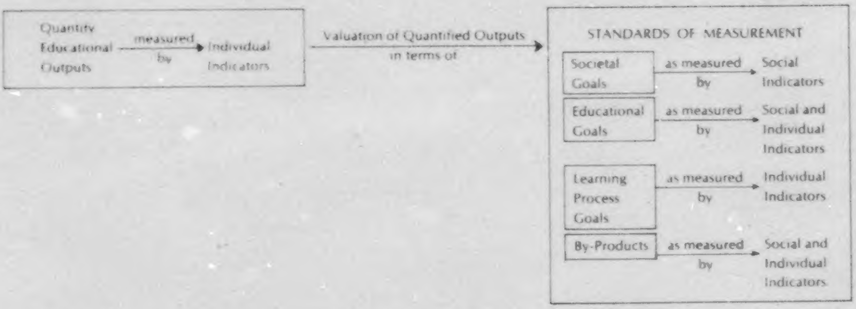
The measurement of outputs by themselves does not indicate their value to society. To obtain this, the measurements must be related to a standard. In evaluating outputs of education, there are two standards of measurements: the value of attaining goals (societal, educational, and learning process); and the value of by-products to the individual and society. All of these must be measured by individual indicators, as well as by social indicators composed of data quantifying conditions of society. The method of evaluating educational outputs can be represented by the diagram on the following page.

A few examples will illustrate how individual and social indicators are used in the method of evaluating outputs just described.

To quantify the attainment of goals, learning process goals are usually measured by individual indicators—along with the criteria of success, failure, or degree of excellence. The individual indicators are sometimes combined into a single index, such as years of schooling or levels of schooling. A diploma reflects a minimum requirement of excellence.

There are almost no indicators to quantify the attainment of educational goals, although it is theoretically possible to develop measures for punctuality, discipline, acquisitiveness, and social responsibility. These might be both individual and social indicators.

THE METHOD OF EVALUATING EDUCATIONAL OUTPUTS

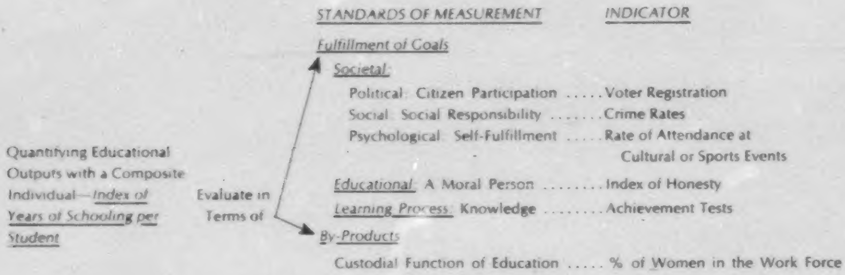

Quantify Educational Outputs
measured by
Individual Indicators
Valuation of Quantified Outputs in terms of
STANDARDS OF MEASUREMENT
Societal Goals
as measured by
Social Indicators
Educational Goals
as measured by
Social and Individual Indicators
Learning Process Goals
as measured by
Individual Indicators
By-Products
as measured by
Social and Individual Indicators

Measuring the attainment of societal goals has been done with many social indicators. In the area of political goals, the rate of voter participation can be correlated with levels of education. The number of books and magazines and the news coverage on political issues can be correlated with degrees of literacy. The frequency of incarceration for political crimes against the state can be correlated with years of schooling. In the area of social goals, indicators such as crime rates, incidence of drug use, welfare figures, and community health measures can be correlated with individual success in school. In the psychological area, social indicators such as attendance at cultural or sports events, newspaper circulation, and church affiliation can be related to individual indicators. Classroom evaluation and psychological tests may give a measure of happiness to the child during his education. Negative indicators, such as truancy, dropout rates, vandalism, and student riots can also be used to gauge the level of the participants' satisfaction in the process of education.

By-products are usually quantified by social indicators. Some examples of social indicators of by-products are the percentage of women in the labor force representing a custodial by-product, turnover in the sale of houses, migration rates, and population distribution by regions representing mobility as a by-product.

The evaluation of educational outputs may be indicated more clearly by the diagram below.

EXAMPLE OF THE METHOD OF EVALUATING EDUCATIONAL OUTPUTS



Quantifying Educational Outputs with a Composite Individual—Index of Years of Schooling per Student
Evaluate in Terms of
STANDARDS OF MEASUREMENT
INDICATOR
Fulfillment of Goals
Societal:
Political: Citizen Participation ..... Voter Registration
Social: Social Responsibility .... Crime Rates
Psychological: Self-Fulfillment ..... Rate of Attendance at Cultural or Sports Events
Educational: A Moral Person .... Index of Honesty
Learning Process: Knowledge .... Achievement Tests
By-Products
Custodial Function of Education ..... % of Women in the Work Force

SUMMARY

It is difficult to evaluate educational output. The educational process is complex and its goals are multiple and, sometimes, contradictory.

It is first necessary to measure individual achievement in the cognitive, psychomotor, and affective areas. These measurements must then be evaluated by standards based on the relative value that the individual and society place on achieving their goals and the value of the unintended by-products of education.

The framework presented here systematizes the measurement of outputs in terms of four broad objectives: economic, social, political, and psychological. The evaluation of outputs in terms of social, political, and psychological objectives can only be made by using individual and social indicators. By their nature, these proxies are difficult to quantify. But such subjective outputs are especially important for cost-effectiveness analysis.

It is easier to quantify educational outputs in terms of economic objectives. These are more specific and there is an exchange market for economic goods in which the effects of educational output can be measured.

The economic evaluation of educational output is crucial for cost-benefit analysis. This evaluation will be discussed in the next chapter.

CHAPTER XVII

The Economic Value of Educational Outputs

MEASURING the economic output of education within the framework used in Chapter XVI relates measurable achievements in the cognitive, affective, and psychomotor areas, or a composite index of them, such as years and levels of schooling or types of education to indicators that reflect economic achievement of societal goals—production and productivity.

Economic evaluation of educational outputs is difficult. An industry or firm's output is clearly measured in the exchange market. Prices generally reflect the interaction between the value consumers place on the particular good and its production costs. The prices, under particular conditions, reflect the value of the good to society.

An educated person's value to society far exceeds the economic value as measured by income or increases in productivity. But even the determination of the strict economic significance of the output of an educational process is difficult. Each approach to measuring the economic value has problems. In this chapter, the advantages and disadvantages of each of the major approaches will be discussed.

THE RATE OF RETURN APPROACH

Calculating internal rates of return has been widely used to justify investment in education—compared with investment in other sectors—or to promote investment of different types of education. The rate of return to education is the discount rate that equalizes the present values of an individual's additional lifetime earnings due to attaining an additional education level and the costs of that level of schooling.

Social versus Private Returns

Costs and benefits can be measured differently from the society's or the individual's point of view. From a social benefit viewpoint, all costs, both direct and indirect, of providing the education are included as well as all benefits before taxes. Private cost-benefit calculations would include the costs to the individual of obtaining the education—tuition and other costs, including foregone income and the after-tax benefits from increased earnings. The following table indicates the major items included in public and private calculations of educational costs and benefits.

	Private Calculations	*Social Calculations*
	Tuition, other fees, and expenditures related to obtaining education	Cost of administration Cost of teacher training Cost of capital Cost of instruction
Costs	Opportunity cost of after-tax (*i.e.*, net) income foregone	Opportunity of before-tax (*i.e.*, gross) income foregone
	Discounted increment in after-tax income over what would have been earned without the education, adjusted for the probability of employment	Discounted increment in gross (before-tax) income attributable to the education, adjusted for the probability of employment
Benefits	External private benefits (e.g., better style of life, prestige, greater job, and social mobility)	External public benefits (e.g., better educated citizens, cultural values, reduced dependency, and crime, etc.)

Private rates of return to education tend to be higher than public rates. Unless the tuition cost fully covers the several costs of producing the education, private costs will be considerably lower than public costs. This is an important finding of cost-benefit analysis. If private returns are much higher than public returns, the private "demand" for educational places will be far greater than the supply of places based only on social returns.

Private and social rates of return can be applied to measure lifetime earning differentials for elementary, secondary, and higher levels of education. The rate of return for an additional year of schooling can be measured by comparing earning differentials for each grade. Rate of return calculations for elementary and secondary education can also include the value of the option to continue one's education. Earning differences between literates and non-literates can also be used to calculate the rate of return to literacy.

Advantages of the Rate of Return Method

The rate of return method includes both costs and benefits of investments in education. Expressed as a percentage, the rate of return to education is easily compared with that of other investments, such as physical capital.

Determining the private rate of return is useful primarily in individual planning for education. Where the student pays large parts of the cost a country may use the private rate of return to determine how much of these costs a student should pay.

Using the social rate of return, a country can decide optimum enrollments at different education levels. At the optimum enrollment level, the rate of return of different educational levels should be the same. This rate could be the rate at which the society discounts future increases in national income.

In general, the rate of return method helps examine the quantitative effects of alternatives. The effect of different discount rates, and the relative effect of different abilities and other non-schooling factors on earnings can be studied by comparing people with the same amount of schooling but with different incomes.

Criticism of the Rate of Return Method

Some major criticisms of the rate of return method as a measure of educational efficiency question the assumptions inherent in the methodology. Questions related to these assumptions are discussed below.

Is Schooling the Only Determinant of Earning? Not all differences in lifetime earnings of people with different levels of education are related to schooling. There are other influences at work: home, outside environment, peer groups, etc. Ascribing the attainment of cognitive, psychomotor, and affective skills only to school experience is incorrect. The assumption that formal education increases productivity can be questioned. Formal education may rather be a selection mechanism for higher-paying jobs. In any case, other attributes—ability, personality, motivation, and family background—show positive correlation with both earnings and educational attainment.

Do Earnings Reflect Productivity? Imperfections in the labor market and external benefits due to education do not justify equating increases of earnings received because of higher education levels with increases in productivity.

In a competitive labor market in equilibrium, wages equal the marginal productivity of labor—the extra value of production due to an extra use of a unit of labor. But the allocation of labor does not necessarily occur as specified in this competitive model. Firms may engage in "conspicuous consumption"—paying for levels of employee education higher than really necessary for efficient production. The wage structure may be rigid, or tradition-bound by the status value of higher education. Non-monetary attractions tend to be greater in jobs reserved for the highly educated. Strong union practices in certain occupations restrict entry and keep wages high.

To correct for the inaccuracy of real wages as a measure of productivity, shadow wages—not actual wages—should be used to measure economic value. In societies whose shadow wages are significantly lower than the market wage, this correction will lower the rate of return.

Can External Effects Be Accounted for in Earnings? When significant areas of production are outside the transaction or monetary market, the contributions of education to productivity cannot be measured. Extra-market production includes the household in industrialized Western countries, and subsistence farming in less developed countries. National income and wage accounting do not cover the productivity of workers in these non-market situations. Because of their education, workers may be able to write letters or fill in tax forms themselves, instead of paying for such work. Much of the economic effect of education may be in areas where production has no discernible monetary value, or where data are not easily available.

The benefits of education extend to the student's family. Some schools provide young mothers with child-care services. This increases the opportunity of productivity for women outside the home. Because of the influence of education, the student's family may also benefit from his schooling.

Schooling provides economic as well as social and political benefits to the community. Better-educated people tend to hold jobs longer, thus lowering unemployment and welfare costs and perhaps also reducing crime; thereby increasing political and social stability. Further, on the job, better-educated workers may have a positive influence on the productivity of co-workers, although negative effects have also been documented.

The increased technical innovation from the general spread of knowledge in the work force and from the research carried on at universities is another benefit. Widespread literacy facilitates more efficient markets in goods, services and in labor because fewer decisions are made on faulty information.

Education increases the efficiency of allocation of labor because better-educated workers are more mobile, geographically and occupationally. A sizable pool of skilled or educated labor also creates a favorable climate for foreign investment.

When studying the private rate of return, two other benefits of education should be considered. Educated people use more of their personal income for investment in other forms of human capital, such as health care. There are also the effects of "culture" and the enjoyment gained from being a student. Both of these effects increases a person's welfare but are hard to quantify.

There might be also some negative external effects of education. Persons with secondary or higher education may have an aversion to manual labor, whether or not non-manual jobs are available. Unemployed or underemployed workers with more schooling tend toward political unrest and disruption more than the less-educated, and their skills in communication help them to spread their unrest more effectively.

What Should Be the Values for Social Discount Rates? The profitability criteria of an investment in education is arrived at by comparing the rate of return to education with the social discount rate. Possible figures for the social discount rate include the rates of return on business or government investment, the interest rates on personal loans, or the shadow cost of capital—each yielding a different result. There is also a question about the funds that pay for educational costs. If educational investment comes from funds that would otherwise be spent on consumption, and if money spent on education were used for other investments even at a higher rate of return, comparing the rate of return on education with the rate of return on other investments might be invalid.

Are Uncertainties Considered in Calculating the Rate of Return? The possibilities of unemployment, sickness, or death should be included in the evaluation of returns to investment in human capital. If only half of the graduates find employment, then the earnings should be adjusted to reflect the probability of 50 per cent being unemployed. The "shadow wage" then becomes a better indicator of benefits.

Is the Wage Structure Static? The use of cross-sectional earnings data to project lifetime earnings assumes a static wage structure. Also, there are practical problems in computing the earnings of the educational system's marginal output. Changes in educational policy could cause changes in the supply of labor at different educational levels, which would change the relative wage structure. A sharp increase in the supply of engineers might reduce considerably the returns to marginal increments to the engineering labor force.

Are Part-Time Earnings Considered in Calculating the Rate of Return? Rate of return analysis should include the part-time earnings of students in lifetime earnings projections. Including these earnings could raise the relative returns to education of secondary and higher education. This is particularly true of professional education where students' part-time earnings can be quite high.

Are the Costs Those of an Efficient Operation? The calculation of the rate of return assumes future costs will remain static and also assumes implicitly that these are costs of an efficient operation. The rate of return, as usually calculated, indicates a relationship between future earnings and costs. A high rate of return may be due to high earnings or to low costs, or both; a low rate of return may be due to low earnings, or high costs, or both. It is the relationship between both earnings and costs that determines the rate of return. If the rates of return are low, it might be an indication that costs are very high because of inefficient operation. It might then be better to try reducing costs, rather than curtailing the expansion of the system because of its small return. When costs of an inefficient operation are cut, the rate of return increases. Because costs are so crucial for deriving conclusions from a rate of return analysis, more attention to the problem of costs must be given when calculating the rate of return.

Practical Measurement Problems in Calculating Rates of Return in Education

These problems center around two areas: measurement of costs and benefits.

Measurement of Costs A basic requirement of rate of return analysis is accurate cost measurement. This appears to be a straightforward task, but it is often quite complex. Because Ministries of Education do not need to maintain detailed cost records for regular reporting purposes, the basic data required are rarely available. Budget data, as discussed elsewhere, are too highly aggregated to reveal program cost in detail and are categorized by item of expenditure rather than by function. Thus, recurrent cost data must usually be either obtained on the basis of special studies or estimated.

Capital cost data are even more difficult to obtain. If the study concerns the benefits and costs of a new facility, then its total capital cost is needed. But if the subject is the costs and benefits of a year's education of a given sort, the capital cost attributable to that year—the "use value" of the capital—is needed. Use value is based upon the original, or, in some cases, the depreciated cost of capital (or, for projects being planned, the estimated capital cost) divided by the estimated number of years of useful life of the capital. Obviously, error or arbitrariness will affect such calculations at several points: basic measurement of the capital cost, estimates of future cost, and estimates of the useful life of the capital.

Measurement of Benefits One basic set of problems affecting rate of return analysis concerns measuring and attributing returns to different levels and types of education. Data on returns to different levels of education are derived from various kinds of socio-economic surveys in which both income and education levels of respondents are reported. Broadly-based surveys are rarely conducted for the specific purpose of providing data for rate of return analysis. Thus, there are immediate problems of translating the data into usable forms. At the most basic level, the intervals that are used to measure education in the survey may not—and often do not—correspond to actual educational levels. Income definitions and intervals may also present problems. In large studies of entire education systems, limitations of sample size preclude very "fine" or micro-analyses of different education levels, especially for higher levels or special types of education. There are insufficient observations on graduates in specific types of education in general surveys to permit detailed analysis.

A complete data-base would include data on age and experience levels that would permit identification of education-age-income profiles. It is not usually known what portion of the slope of the age-income curve for each educational level is attributable to changes in age, experience, and on-the-job learning and what portion is due to changes in the quality of education through time, or to external market and institutional factors.

There is also a problem of too much aggregation. Highly aggregated data do not provide useful information to sectoral planners trying to deal with specific, subsectoral (or within-level) choices. Probing more deeply into the data for a specific education level may reveal that returns to that level may vary by a factor of three or four—with age and other variables constant. This raises many serious questions as to the usefulness of the analysis. To avoid many problems in identifying and measuring the returns attributable to education, a research program must be structured that will gather specific performance data on graduates in a particular type of education—or of alternative types being compared—on a longitudinal basis. But special, mission-oriented research is costly.

Studies of the returns to specific skill training courses are more informative than studies of non-occupationally oriented education; thus, the area of usefulness of rate of return tends to be limited. At present, the rate of return analysis makes it possible only to indicate ways in which useful data and analyses can be generated, and to hope that further research will produce applications of the technique that extend and deepen its usefulness for policy purposes.

Another Use of the Rate of Return Analysis

Because of the shortcomings of this method, it may be more profitable to reverse the approach. If the cost of a new alternative educational program is known or can be estimated, it would be useful to determine the income level of graduates needed to produce an acceptable rate of return. Even if an unrealistically high level of income of graduates seems necessary, the difference between this and a realistic income estimate gives an indirect indication of how great the external benefits should be in order to justify a proposed program. This approach is particularly useful when planning new programs and expenditures for new types of education. For example, the cost of producing a philosophy major is $15,000 and the rate of return to other types of education is ten per cent. In order to justify this return for society, the philosophy graduate would have to earn $5,000 a year more before taxes than a high school graduate. If this graduate can only earn $3,000 a year more, should the program be offered? If the external benefits of having a philosophy graduate are worth $2,000 a year to society, the program should be offered.

Summary of the Rate of Return Approach

The rate of return approach is useful to assess the economic value of education because it takes into account economic benefits as well as economic costs. But results of the analysis must be carefully interpreted. The following questions should be asked by decision-makers anticipating evaluating studies of rate of return:

—Is schooling the only determinant of earnings?

—Do earnings reflect productivity?

—Can external effects be accounted for in earnings?

—What should be the values for social discount rates?

—Are uncertainties and probabilities of unemployment considered in the calculation?

—Is the wage structure static, or is it likely to change in the near future?

—Are part-time earnings considered in calculating the rate of return?

—Are the costs those of an efficient operation?

Rate of return has been used to decide the expansion or contraction of different levels of education. Because rate of return analysis helps determine investments at different educational levels, it should take into consideration the interrelationships between levels of education. In order to expand elementary education, secondary education has to be expanded also. In order to expand secondary education, higher education has to be expanded to provide the needed teachers for that level of education.

The rate of return approach can be profitably used when deciding upon the economic feasibility of new programs. The forecasted costs can indicate the level of earnings that should be expected by graduates to justify the costs of their education.

Private rates of return can be used to determine if the provision of places in a given level of education, or in particular careers, will attract the necessary students. If the private rate of return is less than that of other careers, the career should be made more attractive by providing scholarships or subsidies.

When studies show low rates of return for a given type of education, a sharp scrutiny of costs is recommended to determine if inefficient operations rather than low earnings of graduates are the cause. If inefficient operations are the cause, then a cost-benefit analysis to correct this inefficiency should be made before curtailing this type of education, or before expanding those types that show higher rates of return.

THE MANPOWER APPROACH

This approach is not directly concerned with measuring the economic value of the educational system's output, but it clearly indicates whether the output fits the country's economic needs. The manpower approach implicitly places a high economic value on education that supplies the trained personnel in occupations demanded by economic growth.

The manpower approach forecasts the supply and demand of occupations. These forecasts can be translated into groups of people from various educational levels and compared with the educational system's forecasted output.

One way to compute the projected demand is to survey employers for projections of the number of people with various qualifications they will need within a certain period of time. The results of the survey are then simply aggregated. This type of analysis is mainly used for short-term planning. It is not recommended for long-term planning at the national level because it would be very hard for the individual employer to take into account the interaction of macro-variables.

Other methods of forecasting the demand for occupations involve the following steps:

—the projection of output by economic sector
—estimation of productivity changes
—estimation of employment in each sector implied by the output growth and productivity changes
—determination of the distribution of the labor force by occupation (skill profiles) of the labor force by sector by studying past trends or comparisons between other countries
—aggregation of results obtained in each sector.

Forecasting the supply of an occupation requires a knowledge of the following: the number of people in the occupations—data usually available from censuses or derived from manpower surveys; estimated changes caused by new entrants to the labor force from the formal and informal systems of training; net transfers between occupations; and losses over time caused by death, retirements, migration, disability, etc.

The demand for occupations is calculated. The difference between supply and demand over time provides the first indication of how large the deficits and surpluses may be if the trends of supply continue, based on projected demands. This deficit is a gauge of the "value" of the educational system's output. A large deficit between supply and demand in some occupations and a surplus in others show an inefficient production of outputs.

Advantages of the Manpower Analysis Approach

This method readily predicts potential surpluses or deficits in specific groups of occupations that may be caused by the education system's output. It yields highly specific recommendations for educational policy in the form educational planners need. High specificity quickly supports or disproves projections, with rapidly available evidence.

There are also other important advantages in forecasting that the manpower approach provides. It may be extremely useful for analyzing specific educational programs. Instead of indicating that a country will need so many skilled workers or vocational school graduates, manpower analysts might examine particularly important industries to determine what skills will be needed, and how many new entrants to their skilled labor force will be needed—at what proficiency level and over what period of time. This will indicate whether creating one or more schools to supply trained new entrants is justified.

A manpower analysis could also determine if most new workers enter these industries from schools or if it would be more effective to retrain workers in related fields. Such considerations strongly suggest job analysis—which is generally considered part of administration and personnel management—and relating educational needs to specific job requirements.

Manpower analysis can be coupled with job analysis to help modify existing educational curricula to suit occupational needs. It can be integrated with a general labor market analysis and lead to the development of new systems of training, wage policies, etc.

Another area in which the manpower approach can be made more useful for program planning is analysis of demand for new entrants to the labor force by industry, education, and skill levels. A point that is usually overlooked in manpower studies is that while the whole labor force and skill hierarchy changes with economic growth, opportunities for graduates of various types of education may not be found at all levels of the skill hierarchy. In all but a few atypical cases, recent graduates enter the labor force via a relatively low-skilled or "entry-level" job and advance to higher positions after on-the-job training and/or internal promotion. Care should be taken not to bias estimates of skill needs toward higher skills because many employment opportunities exist in the lowest ranks of the hierarchy. Disregarding this point leads to erroneous conclusions.

Disadvantages of the Manpower Analysis Approach

The disadvantages are basically three.

The first is the assumption that employers cannot substitute workers in one occupation with those of another. This may be correct for high level occupations or for those with very specific training, but it is not true for a broad range of occupations.

The second disadvantage occurs because the relationship of occupation to specific education may be tenuous. Researchers assume that the most important economic contribution of education comes from the cognitive skills which it develops in students. But that assumption may be incorrect because the behavioral attributes which the student acquires in adapting socially in school are just as important since they are a factor in increased productivity. Therefore, measures of educational efficiency should consider the effectiveness of education in providing or reinforcing behavioral attributes, as well as cognitive skills.

The increased adaptability of educated workers is an economic benefit of education in that education increases elasticity of substitution—the increased capability of shifting production methods with changing factor prices. Therefore, manpower forecasting should use a behavioral as well as a cognitive model of education to predict the number of highly adaptable, generally educated workers needed in industries where technological innovation is particularly frequent.

The third and most basic disadvantage of using the manpower approach as a policy guide is that it does not take into account the costs of providing the needed skills. The existence of a future demand for a certain kind of trained manpower does not necessarily mean that investment in that area of education is worthwhile. Educational policymakers must be able to compare the costs with the benefits of having the trained workers available. Therefore, manpower forecasting is probably only a useful approach to economically rational educational planning if used in connection with other economic tools that consider costs and benefits of educational investment.

CORRELATION ANALYSIS

This statistical method relates an index of educational activity to one of economic activity. A correlation analysis shows whether the two activities are closely related, although correlation does not indicate causality. This method can be used in various ways: for comparison between countries; for comparison of one country at different times; or for inter-industry or inter-firm comparisons of the relative levels of the educational and economic indices.

Inter-country correlations usually use the GNP per capita as the index of economic activity. The index of educational activity can be enrollment at various school levels, percentage of literate populations, or expenditure levels for education. A 1961 United Nations study on the world social situation used per capita energy consumption and percentage of the male labor force in agriculture as the indices of industrialization; percentage of literacy, school enrollment ratio, and level of urbanization were the indices of social development.

The correlation approach can be used to relate GNP and education over time in a particular country. If education is considered only as a consumer good, the income elasticity of demand for education can also be calculated.

Inter-industry and inter-firm correlations are similar to the inter-country correlations. They also relate the differing emphasis on education by industries or firms to differing productivity levels. Indices of educational emphasis include the percentage of the work force with secondary or higher education, or the percentage of gross income spent on research and development. Comparing indices of educational emphasis and productivity can be made over time, or on a cross-sectional basis within a country or between countries.

Advantages of Correlation Analysis

The correlation approach gives a broad perspective. Inter-country comparisons give a developing country's planners an international perspective. The comparison of countries at different stages of educational and economic development reflects the changes taking place. Such comparisons show the range of possible levels of investment in education at a given level of GNP per capita.

Inter-firm and inter-industry correlations are less useful. The microeconomic theory of the firm suggests that different technological possibilities for firms in different industries, and differences in relative scarcity of inputs for firms in the same industry but in different locations might make differing "emphases on education" economically sound.

Disadvantages of Correlation Analysis

Correlation studies as measurements of education's contribution to economic growth do not show causality. A positive correlation of high levels of educational development with high GNP per capita may mean that a high GNP causes high expenditure on education or that high investment in education causes a high GNP.

There are several problems in making comparisons between countries. First, if major areas of production are outside the market's operations, then the contribution of education in those areas will not be measured in the GNP.

Second, if a major function of education is to act as a selection mechanism for higher-paying jobs, then the increase of educational levels with the increase of the GNP may simply reflect the greater need for selection that accompanies development.

Third, educational indices are not necessarily comparable. Percentage literacy figures are comparable only if they are all computed with the same standards. Enrollment figures may not be comparable because of substantial differences within countries' educational systems.

Fourth, if expenditure data are used, they must include the production foregone (opportunity cost) by keeping students out of work.

Fifth, equal resource expenditure does not mean equal education—unless different educational systems use resources with equal efficiency. Effective use of educational resources varies considerably within countries. Such variations should be taken into consideration and not assumed away.

Inter-country comparisons also do not relate educational costs to economic activity, except when expenditure figures are used. This may show differences in efficiency of resource use or factor prices rather than effectiveness of education.

When analyzing a particular country over time, the time-lag problem affects the correlations. Presumably, education's positive economic effects occur after initial expenditures, but only if education is treated as an investment and not a consumer good.

Inter-industry and inter-firm correlations do not have as serious a problem with causality as do education-GNP correlations. Unlike individuals, firms do not consume education for enjoyment, although very profitable firms may engage in conspicuous consumption by hiring more highly educated workers and investing in more research and development than profit-maximizing criteria would dictate.

The two major drawbacks to inter-industry and inter-firm correlations are market power and externalities. Industries placing a relatively heavy emphasis on education by hiring highly educated workers and investing in training and research may also have relatively greater market power. If these industries are relatively very profitable, the reason for their profitability is not certain. The correlation between market power, education, and profits may reflect the profitability of market power, rather than the profitability of emphasizing education.

The problem of the external economies of education becomes important in inter-firm and inter-industry correlations. Correlations involving GNP figures avoid much of this problem because they use the total monetary measure of production. But the profits of a single firm or industry that heavily emphasizes education may reflect only a small part of the economic benefits of educating its workers or of its research and development efforts.

THE RESIDUAL APPROACH

The total increase of a country's economic output over a given period is only partly explained by increases in the measurable inputs of physical capital and labor. That part of economic growth not attributable to those inputs is called the "residual," and it is attributed to other inputs. Such inputs include increases in physical strength and longevity as a result of improved health care and nutrition, increases in mobility and general know-how, and improvements in organization and technology. But qualitative improvements in the labor force from education, and advances in science and applied technology developed in schools, are probably the most important components of the residual. Thus, the residual has been considered to indicate the magnitude of the contribution of education to economic growth.

There are several methods to calculate the residual. One compares an aggregate input series with an aggregate output series. An input series for the labor input and a constant price of labor and capital in GNP as weights is used to determine the overall arithmetic index of inputs. To measure the economic contribution of the residual factors, the rate of increase of the aggregate input series is subtracted from that of the aggregate output series. A study of economic growth in the United States using this method attributes about 80 per cent of the increased output per unit of labor—over 40 per cent of the increase in total output—to the residual, for the period 1889 to 1957.

Another way to compute the growth attributable to the residual is to use a production function (see p. 230) which contains explicit assumptions about the underlying nature of the economy in question. The production function is assumed to be linear and homogeneous. It is further assumed that technological change does not affect the rate of substitution between capital and labor, i.e., it is "neutral." The residual increase in output is then calculated. A study using this kind of production function attributes over 80 per cent of the increased output per manhour in the United States between 1909 and 1949 to the residual.

A third technique for calculating the residual involves converting changes in the amount of formal education which the labor force has had into changes in the size of the labor force that would have had the same impact on output. This conversion is calculated using income differentials between educational groups in a given base year—if marginal economic returns to education are assumed to be constant.

The basic assumption here is that the income differentials are caused by differences in the number of years of education. This assumption is debatable, as the previous section on rate of return shows.

A study made of the United States estimated the economic effect of advances in knowledge by subtracting the rates of growth attributable to all other inputs—including labor, physical capital, formal education, and economies of scale—from the total rate of growth. The computed rate of growth attributable to formal education was 20 per cent of the total growth rate of the GNP, or about 40 per cent of the residual.

Advantages of the Residual Approach

This approach is particularly useful because it shows the relative importance of factors other than accumulation of physical capital and increase in manhours in raising economic output. No matter which variation of the residual approach is used, the unspecified inputs that make up the residual will have been very important to economic growth. But it is not clear that the residual is dominated by the human factor or that qualitative improvements in labor are primarily attributable to formal education.

Disadvantages of the Residual Approach

The major difficulty is the nature of the residual itself. In addition to formal education, the residual measures increases in output attributable to long-run improvement in the quality of capital, economies of scale, work experience, improvements in health, informal education, changes in the product mix, increasing labor mobility, reorganizations of the economy or of production, and other unidentified inputs. It is not exaggerated for economists to call the residual "the measure of our ignorance."

There are also technical difficulties in calculating the size of the residual. The available indices of capital inputs do not account for the interaction between advancing knowledge and improvements in quality of capital. Measures of capital inputs are deflated on the basis of indices of the costs of labor and materials. This measurement of capital inputs cannot reflect improvements in the equipment's productivity.

Computing the residual using production functions raises questions about the assumptions on which those functions are based. The required assumptions of linearity, homogeneity, and neutrality of technological change are especially weak when used to describe a long-run, dynamic situation.

Using broad historical data to compute definite percentage figures that represent relative contributions of factor inputs to growth is also problematic. The weighting of the labor and capital input series by the relative shares of labor and capital in the GNP assumes that wages are equal to the workers' contribution to production. This assumption is only valid if there has been perfect competition over the period covered in the study. The weakening of this assumption would entail a lowering of the accuracy of the percentage figures to percentage ranges.

The residual method is not particularly useful to educational planning because it measures only the magnitude of the economic benefits, and not the relative costs in increasing or improving the inputs that make up the residual. Residual data only show economic growth in the past in very large-scale economic terms. They do not suggest which areas of education will yield the greatest economic returns. Nor do they indicate if future economic growth will follow past patterns. The results of residual studies are primarily useful to point out the weakness of relying solely on capital accumulation for economic growth. They do not define the role of education for economic development.

REGRESSION ANALYSIS APPROACH

This is similar to the residual method. It shows the economic effects of schooling on the individual. A general equation relates education and other independent variables to annual earnings. The independent variables may include age, industry, father's occupation, individual's occupation and place of occupation. The size of the education coefficient indicates to what degree increased earnings are a function of additional schooling. The coefficients of the other independent variables indicate how much those other factors determine earnings.

Regression analysis only measures the relative value of education for the individual. It shows how much the individual can expect education to improve his earning potential. Regression analysis can also give educational planners a general indication of the amount of schooling that individuals may invest in.

Regression analysis has many of the same methodological difficulties as rate of return analysis. Labor market imperfections may obscure the relation of actual wages to productivity. Only if actual wages equal shadow wages can educational planners use regression analysis studies to determine the relationship between education and productivity. The regression coefficient for education may include the effects of other factors positively correlated with education, such as ability. These other factors, if not made explicit, might make education seem to be a much more important determinant of earnings than it really is. Also, computing the education coefficient assumes a fixed relative wage structure, but changes in educational policy can change the relative supplies of educated labor which, in turn, change relative wages.

A general problem with regression analysis is that it measures only the benefits of education—not the private or social costs. But regression analysis data can be used in rate of return calculations. The regression coefficient for education gives some idea as to what degree earnings are determined by education, and it reduces uncertainty as to how much of the lifetime earning differentials can be attributed to education.

PRODUCTION FUNCTION ANALYSIS

This concept has been used to determine the residual (see pp. 227-229), but it is mostly applied to analyze the educational process. Studies using this concept have been cited to justify policies on the allocation of resources in education. A production function is a schedule or table showing different combinations of inputs that will yield different outputs. The quantity of outputs produced is a function of, or depends on, the quantity of inputs used. When the table or schedule can be expressed in algebraic form, this equation is possible:

$$y = f(x_1, x_2, x_3, \dots x_n)$$

where y is a measure of educational output or performance, $x_1, x_2, \dots x_n$ are different measures of inputs (characteristics of students, teachers, buildings and materials, etc.), and f is a mathematical function relating the x's to y.

To derive the relationship between the variables, multiple regression analysis is used. Generally, the equation is obtained from a least-square estimate of the regression equation parameters. The coefficients indicate the incremental effect of a unit change in an input on the output. The coefficient of determination (r^2) also indicates how much of the variation in output is explained by the particular equation reflecting the educational process. When the units of inputs can be translated into monetary terms, it is possible to relate the effect of monetary expenditure to the increase of output.

To determine the production function of a school system, assume that a given test score reflects the educational output y. There are three factors influencing this output:

x_1 = quality of teacher, reflected in salary schedules
x_2 = buildings and materials, reflected in their depreciated value
x_3 = socio-economic background of children.

The following formula can then be given:

$$y = ax_1 + bx_2 + cx_3.$$

A statistical analysis will ascertain r^2, how much of the variation of y can be explained by x_1, x_2, and x_3, and the relative importance of these three variables derived from the coefficients a, b, and c. If the cost of changing x_1, x_2, or x_3 can be evaluated in monetary terms, the cost of changing the output, y, can be calculated.

Advantages of Using a Production Function Analysis

This method explicitly describes the educational process and allows the introduction of diverse economic, social, quantifiable, non-quantifiable, and nominal variables—those variables to which names have been assigned, such as region, race, etc. With sufficient data, alternative theories can be tested. Theories about the differential effectiveness of schooling on different social groups, or about the relative importance of attributes acquired outside the school, can be evaluated.

Disadvantages of Using a Production Function Analysis

There are five disadvantages to this approach.

—The technique does not test causality because the equation does not derive from an educational learning theory.

—Most of the variables used in the regression analysis will be only proxy variables. Because no adequate learning theory exists, socio-economic class is sometimes used as a proxy for motivation of the student, and salary-scale as a proxy for quality of the teacher. We must be careful to formulate policy with respect to actual variables and not with respect to proxies because variations of the proxies may not always reflect variation in the actual variables.

—While the advantage of the production function is the inclusion of non-quantifiable and nominal variables, their scaling presents formidable statistical problems.

—This type of analysis has been applied to large educational systems. This presents grave problems with respect to the reliability of measuring instruments (in most cases, tests) and aggregation of data. Any aggregation of heterogeneous data produces only an average function that may not be useful to any particular situation—a production function for the nation may be useless in a particular region.

—As in any statistical analysis with many socio-economic variables, there is always a danger of multi-collinearity. When the independent variables are highly correlated, there is no way to know the causal relationship between independent and dependent variables. Expenditures on education and economic class are related. If both variables are used, there is no way to assign importance of one variable over another. Some insight on the relative importance of variables can be gained with different statistical manipulations, but the problem is still an important consideration in this type of analysis.

Another Use for Production Functions in Education

Production functions may be more useful at the micro-level of education. The basic concept of having different combinations of inputs to produce different outputs can be used as a framework to plan and evaluate educational research, especially teaching technology and curriculum. Different experiments can be designed to achieve a certain level of proficiency using different combinations of teachers, media, and materials. The effects of substituting one input with another can be studied and a cost-analysis can follow, based on the relationship of prices of inputs and the relative contribution of inputs to the output. This experiment and analysis can be extended to cover different types of students, different environments, and other inputs.

The basic difference between using production function for micro-analysis of education and for macro-problems is that the analysis of macro-problems involves mostly an ex-post-analysis of a process. By necessity, this admits only a deductive approach. At best, the result provides only glimpses of the educational process. Use of the production function on the micro-level may allow an inductive approach that could lead to innovation and a better allocation of resources.

SUMMARY

Besides the rate of return approach there are other methods for measuring the economic value of education. Each is suited to a particular purpose; each has its drawbacks.

The manpower approach is useful for predicting potential surpluses or deficits that may be caused by the education system's output. It can also serve as a tool for relating curriculum to job requirements. But the assumption of no substitution between occupations, and the relationship of occupation to specific education may be tenuous. Also the manpower approach does not take into account the costs of providing the needed skills.

Correlation analysis, the residual approach, regression analysis, and the use of the production function concept to measure the value of education are useful. They show the relative importance of education and other factors in economic growth, and the importance of non-educational factors in the process. But they are less useful as instruments for planning and decision-making because they do not show causality and their application presents many difficult methodological problems.

Nevertheless, these methods, in conjunction with the manpower and rate of return approaches, offer decision-makers a composite group of indicators to help make sounder economic decisions in educational planning.

CHAPTER XVIII

Educational Planning and Program Budgeting

EARLIER portions of this book have considered techniques such as cost-benefit and cost-effectiveness analysis that indicate efficient courses of action in individual programs and projects. This chapter addresses planning and program budgeting (which is one structural approach to planning), as higher level approaches to achieving efficiency through allocations between projects. Planning and program budgeting seeks internal coherence within sectoral programs, permits accurate projection of resource needs, and promotes efficiency in resource use.

Sector-wide planning and program budgeting identify relationships between different programs and ways in which the sector programs can be made more internally consistent and effective. They also view sectoral expenditures in a longer time perspective. This is especially important because the amount of resources needed over a long period of time determines to some extent the means that must be used to generate the revenues.

Unfortunately, the major methodologies of educational planning applied in most developing countries have not been notably successful. This has been due to technical weaknesses in some of the methods used and, most importantly, to a top-downward orientation in planning rather than an orientation toward internal efficiency.

This chapter, therefore, suggests a different orientation of planning, one which incorporates several continuing activities: formulating broad strategies; developing and implementing programs and projects; and relating program plans to the annual budgeting process.

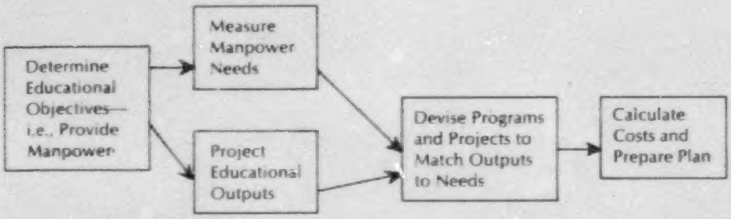
Most Ministries of Education follow traditional line-item budgeting procedures rather than integrating planning and budgeting, but there has been a major recent upsurge of interest in program budgeting as an approach to allocating educational resources. A detailed discussion of program budgeting as a structural planning approach is therefore presented and includes an assessment of the biases, advantages, and disadvantages of program budgeting.

EDUCATIONAL PLANNING

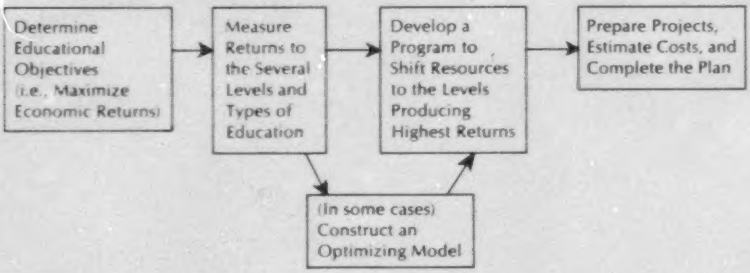
Educational planning is a process that usually involves determining educational needs, preparing a strategy to meet those needs and a set of programs and projects to carry out the strategy, and incorporating them into a plan document. Plans can be short term (one year), medium term (generally five to ten years), or long term (over ten years). Most plans are medium term, although examples of each type of planning (and sometimes more than one), are found in various countries. Unfortunately, medium-term plans are rarely part of the annual budgeting process through which planned projects become operational.

There are three approaches generally used, which are based on manpower studies, rate of return analysis, or simply projected growth of enrollment. The last is the most frequently used. In highly simplified terms, these linear planning aproaches can be diagrammed as follows:

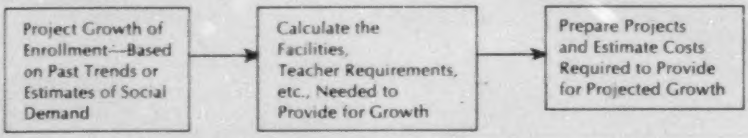
—The Manpower Approach


Determine Educational Objectives—i.e., Provide Manpower
Measure Manpower Needs
Project Educational Outputs
Devise Programs and Projects to Match Outputs to Needs
Calculate Costs and Prepare Plan

—The Rate of Return Approach


Determine Educational Objectives (i.e., Maximize Economic Returns)
Measure Returns to the Several Levels and Types of Education
Develop a Program to Shift Resources to the Levels Producing Highest Returns
Prepare Projects, Estimate Costs, and Complete the Plan
(In some cases) Construct an Optimizing Model

—Quantitative Projection of Enrollment


Project Growth of Enrollment—Based on Past Trends or Estimates of Social Demand
Calculate the Facilities, Teacher Requirements, etc., Needed to Provide for Growth
Prepare Projects and Estimate Costs Required to Provide for Projected Growth

All of these approaches have encountered many problems. In general these include:

—The information needed—even basic enrollment data—has almost always been inadequate. The scarcity and unreliability of data have been especially severe in the manpower and rate of return approaches.

—Technical shortcomings in the actual planning have led to various faults, most especially oversimplification. Conclusions have been unfeasible or internally inconsistent.

—The internal effectiveness of the education system has been ignored, largely because of unreliable indicators of effectiveness.

—Cost-analysis and estimating have been crude or almost totally inadequate.

—Connections between the overall plan and the projects proposed have been tenuous. A major weakness has been the lack of sound project formulation.

—Implementation of the plan, whatever its weaknesses, has usually been neglected by local authorities.

—The crucial relationship between periodic planning and annual budgeting has usually been very weak. Medium- and long-term plans have not been included in Central Government's annual budgeting.

These problems seriously challenge sectoral planning. In general, planning has been "from the top down" rather than "from the bottom up," and it has ignored specific needs and problems. Making a plan has been considered to be a periodic effort based on deductive assessments of needs and the strategy to meet them. Because plans have not grown from central administrative perceptions of operational problems and solutions, they are seldom implemented, and changes fall short of goals set in the plans.

What Planning Should Be

This section outlines a planning approach that may overcome some of the past problems. It covers decisions and allocations of public funds controlled by administrators of the education sector.

The terms "education sector" and "education system" create some ambiguity. The boundaries of the "sector" may vary from country to country and from one decision-maker to another. To an official in the Ministry of Education, the sector includes the activities of his own Ministry and sometimes private educational institutions over whose regulations, certification, standards, and subsidies, he may exert control. To a treasury official who considers total expenditures on education, the sector might also include the educational activities of other ministries, such as the Ministries of Labor, Agriculture, and Defense.

The term "system" may be applied to either set of boundaries. From certain points of view, it can include all formal education plus non-formal learning of skills, including on-the-job training by private firms. In this section, "system" refers to the formal education system, especially those interrelated activities of the Ministry of Education. Sectoral planning here refers to the application of systematic research and analysis to questions and decisions in that part of the system over which public administrators can exert control.

Education Sector Planning Defined

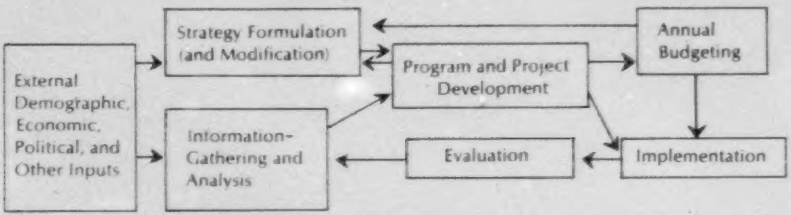
Planning provides information to facilitate decision-making in continuing program administration. It is not a merely periodic, linear activity leading to a single document that prescribes action for a number of years. Its definition is as follows: Educational sector planning should be a continuous process of providing information to decision-makers on how well the system is accomplishing its goals, and on how the cost-effectiveness of such accomplishment can be improved.

This definition implies that the existing system's performance should be evaluated. Planning does not start from some zero-state in practice. It considers ways to modify and improve existing activities. Evaluation identifies problems and indicates ways to improve efficiency and effectiveness. Such information from the continuing evaluative process, together with analyses of proposed new programs, gives administrators a basis for selecting programs and projects that will strengthen and improve the education system, as well as expand it to serve growing populations. Obviously, planning is oriented toward the future, but it is based on evaluation of performance in the present and the recent past. Decisions and selections are made through the annual budgeting process, and sectoral planning and decision-making should be closely related to it.

Planning should lead to a general strategy, formally expressed in a plan document, but it does this from many sources of empirical information, not from technically determined solutions. The strategy chosen may also be modified by altered circumstances, new information, and increased understanding.

Planning departments may be at the top administrative level, but planning and decision-making goes on at all levels. It is a process built up from many lower-level choices affecting specific programs. The analytic tools used differ, depending on the level of the planning-decision process, as discussed below.

A simple diagram illustrates the nature of planning, as conceived here. (This may be contrasted with the three linear approaches discussed and diagrammed earlier.)


External Demographic, Economic, Political, and Other Inputs
Strategy Formulation (and Modification)
Information-Gathering and Analysis
Program and Project Development
Annual Budgeting
Evaluation
Implementation

What is the relationship between the process diagrammed above and preparing an education sector plan? A plan for, say, five years is developed with a strategy for sectoral development based on the findings of the continuing planning process. The plan document is used as a guide for implementation activities during the period in question. The annual budgets for education are drawn up on the basis of the plan, plus new information from the information-gathering and evaluation phases. The ongoing research, evaluation, and planning process continues to generate information for the next plan. (Some countries use "rolling" plans which annually update the five-year document, taking account of new information or changed circumstances. Such rolling plans would be natural outgrowths of the continuing planning process proposed here.) The plan sets forth explicit strategy for effectively molding the public education sector to meet national needs. This strategy indicates what specific action programs and projects should be chosen. Budgetary implications of the project list are projected and checked against estimated financial resources. The results of evaluation of existing programs and analyses of proposed changes are incorporated in the next plan document, which serves as a blueprint for implementation in future years.

Preparation of a plan document will focus on and formalize the various aspects of planning cited. But the plan essentially reflects the continuing process of seeking and using policy-relevant information to make decisions.

In the past, the plan has been seen as independent of the ongoing tasks of guiding and administering the system. Because administrators of plans that have not grown out of the continuing process are inexperienced in using research and analysis, they cannot evaluate the implications of the proposed programs. They, thus, approve plans which have little relation to the main needs and problems of the education sector.

Several important points emerge from the preceding discussion:

—*Planning is a continuous, non-linear process, not a one-way procedure leading to a single output.* All activities are carried on continuously (although consideration of strategy questions is intermittent and largely associated with the annual budgeting cycle). If there is any priority, it is in the information-gathering phase. But as practitioners know well, strategy formulation and program development must often proceed long before all the information needed is available. The process of providing information for decisions must be an organic part of the administration of a developing education system. To date, most plans have been abstract. They were directed largely toward high-level goals and strategies, which had little correlation between the plan's content and the daily decisions that sector officials face. Only educational administrators who have directed a continuing program of evaluation and research, absorbed its results, and participated in lower-level choices based on those results can both comprehend the plan and effectively implement it.

—*Planning does not go on in any one place.* There should be a planning unit, preferably linked with the highest level of decision-making in the Ministry; but this unit does not undertake all the planning tasks indicated here. There is a hierarchy of decisions in sectoral planning and not all of them are made at the highest level. (See below.)

—*The frequency of decisions associated with each aspect of planning varies greatly.* Strategy formulation decisions—the high-level choices of major directions of educational development—are made much more frequently than every five years. But they are not as frequent as the decisions affecting implementation which are made almost daily. Budgeting decisions tend to be made on an annual cycle. The process of information-gathering and analysis goes on continuously. Analyses may tend to be oriented toward the budget cycle, but much of the research is not applied purely to budgeting.

—*All phases of planning and decision-making are based on a systematic (preferably quantitative) analysis designed to increase the efficiency or cost-effectiveness of the education system.* This set of concepts has sometimes been called a "systems approach" to planning. These concepts include clarifying objectives, establishing criteria for choice, use of quantitative data, comparison of alternatives, and analysis in a cost-effectiveness framework. For a discussion of the advantages and disadvantages of this approach, see pp. 248-249.

Outlines of Sub-Activities within Major Planning Phases

Each major phase or aspect of planning shown in the diagram on p. 238 is a complex process. Brief discussions of some key sub-activities within phases of the planning process indicate the nature of the tasks in each phase and some of the interrelations between the several phases.

Information-Gathering and Analysis The principal activities in this phase include:

—Compiling basic data on enrollments, flows of pupils, teacher supply, etc.

—Identifying and studying key problems and subjects calling for action by public agencies: impending teacher shortages, increasing wastage, curriculum weaknesses, or excessive costs.

—Researching both problem-related subjects and general performance of different levels and types of education.

—Monitoring and evaluating the implementation of previous programs.

—Reviewing information from sources outside the Ministry—manpower and employment data, demographic data and projections—and incorporating this information into the descriptive, evaluative, and analytical stages of planning.

A major weakness of planning is usually the lack of policy-relevant data and information. Attempts at "diagnosis" or sector analysis are rarely more than highly aggregate descriptions of the education system. Where descriptive data indicate problems, such as excessive wastage or unemployment among vocational graduates, they do not relate the problem to its causes nor do they indicate the ways in which programs can help resolve the problem. True diagnosis and evaluation depend upon more intensive, special studies. For this reason, information-gathering is a most important phase in planning.

The kinds of studies needed are fairly simple. They differ markedly from most academic research on education. They can be called "mission-oriented research" (studies that explore a particular problem or question) or "policy research," "diagnostic studies," or other similar terms. Whatever they are called, they offer specific data on the performance of operating programs. Very few countries include such information-gathering in planning activities, although recognition of the need for special research efforts has increased.

It is unrealistic to expect extensive research on all aspects of education to be done in conjunction with any particular plan. This is why investigative efforts are stressed here. A program of special studies based on priorities of information needs should be planned like other aspects of the education system.

The subjects of such research are varied: an initial priority should be cost studies of major levels and types of education to make sound cost projections, to determine the feasibility of enrollment targets, and to provide the basis for various analytical tools. Another priority need is to monitor the implementation of earlier plans to identify lags, obstructions, or cost-overruns.

Educational performance has rarely been studied in depth. Part of the information-gathering phase should produce improved performance indicators. The methods of such research would include longitudinal studies, sample-based investigations, case studies, in-depth interviews, and other approaches rarely used in developing countries. Not only specialists in education, but also economists, statisticians, sociologists and administration experts among others would be needed to analyze the causes of wastage and managerial ineffectiveness of schools and other agencies.

Information gathered on priority topics should facilitate strategy formulation, program and project development, and budgeting phases of planning and should indicate ways to improve ongoing programs. An education system is best improved by evaluating its performance and using this information to improve that performance. The usual information available to planners and administrators does not permit analyses of program performance. Special information-gathering activities are needed.

Strategy Formulation Major activities in this phase include:

—Reviewing national goals for education, including provision for: growing enrollments, greater equality of opportunity or regional equity, meeting manpower needs for industrial and agricultural development, and improving educational quality and efficiency.

—Projecting the education system's desired quantitative development, and the implications of this growth for costs, teacher supply, and other factors.

—Assigning priorities to problem areas identified in the information-gathering phase, and developing good combinations of policies, programs, and projects that respond to the various priority needs.

—Developing alternative strategies and incorporating sets of program and project alternatives.

—Analyzing the feasibility, costs, and effectiveness of alternatives of the strategy and indicating preferred alternatives.

—Integrating the goals, quantitative projections, and strategy into the education plan.

Strategy formulation at the highest level of decision-making leads to an educational plan. It is the most important phase in the preparation of the plan document because it considers goals, relates programs in education to major national policy issues (such as regional equity or national manpower needs), assigns priorities, and establishes guidelines of the programs.

Most of the approaches to educational planning discussed thus far have been oriented toward strategy formulation in planning. Rate of return analysis tries to indicate which levels of education should be given highest priority. Manpower analysis indicates the needs for different types of education. But the aggregate figures which these planning tools provide offer only general guidance and should be checked against each other and against other policy indicators, such as the budget, before they become the basis for major policy commitments.

There are several important differences between the planning approach suggested here and the way other approaches carry out strategy formulation. Strategy formulation is not based on one or two sources of information and guidance. A multifaceted program of evaluation and research indicates, through very detailed data and studies, how various parts of the system are performing. Strategy formulation is closely related to the program and project development phases. The final strategy in the plan is not an abstract statement of what ought to be done. Rather, it has specific program content relating to strategy objectives. Further, strategy formulation is done in conjunction with the budgeting process.

Strategies such as universal primary education or placing an arbitrary proportion of secondary students in vocational courses have too often been selected without considering their feasibility, cost, or effectiveness.

As noted before, the strategy—and the plan—should evolve from a continuing evaluation of existing programs. Sound strategy formulates new alternatives and analyzes programs and projects on the basis of cost and effectiveness.

Program and Project Development Program and project opportunities continually arise in the course of evaluating existing programs, when considering ways to overcome sector problems, and when formulating a set of actions or a strategy designed to overcome the problems.

For example, when descriptive data indicate that few secondary graduates can pass a rigorous university entrance examination (or that many enter but most fail and drop out), and detailed research reveals poor preparation in basic areas (such as mathematics, composition, or science), then several alternative projects might be suggested: strengthening curriculum and retraining teachers at the secondary level; establishing a university preparatory school for members of disadvantaged groups; and providing an intensive university remedial program to tutor students. These alternatives would be developed in preliminary form, with estimates of costs and other resource needs; they would then be presented, together with supporting analyses, to the top administrators responsible for new commitments. If the inadequate preparation problem has high priority, as is assumed in this example, these alternative projects are then considered. If one is selected, further work is necessary to specify the project's exact needs: funds, space, teachers, teacher training, curriculum preparation, books and materials, and administrative orders and/or actions. The project's total costs (capital and recurring) are then calculated. Discussions with budget officers about the project's impact on the budget for a given level will probably be initiated. For example, the new project's costs might be compared with the high cost of over-enrollment, the subsequent increase in dropouts, and/or the social costs of fewer graduates. If the project wins support, it will become a specific part of the plan—in a strategy to overcome poor preparation for university education.

In general, a program and project development aspect of planning has the following components:

—Detailed specification of projects and programs—in cooperation with operating divisions within the Ministry—to resolve key problems, such as: meeting projected needs for the number of facilities, teachers, and other inputs; increasing the effectiveness of existing programs—curriculum development, improved laboratory facilities, administrative changes, incentive systems; and developing new projects and programs to respond to problems and needs identified in other phases of planning.

—Feasibility assessments of proposed projects based on information gathered, including cost projections and performance estimates, where possible.

—Detailed project preparation—generally performed after its inclusion in the current plan—including justification, quantitative description, inputs required from other parts of the education system (teachers, for example), expected outputs, performance and cost estimates.

—Discussions with budget departments of the Ministry of Education and the National Budget Office on the program's general structure and size, and its cost implications.

The Budgetary Phase Budgeting has usually been distinct from planning activity. Relationships between this new planning approach and budget-making are described below.

The budget indicates the total funding available for all public activities in education. In a sense, planning can support the sector budget request by providing indications of national need, analyses, and justifications for increased funding, as well as a set of projects ready for implementation. Generally, the total sector allocation is determined outside the Ministry of Education.

Cost analyses permit detailed projections of funding needs for ongoing activities and new projects. Detailed cost analyses by cost component may indicate possible increases in efficiency that permit doing more with the funds available.

Performance and cost information from the planning process are essential to a program-budgeting system—if one has been adopted.

Rolling five-year plans, updated annually in continuing planning, provide the medium-range time perspective that program budgeting tries to offer. The full budgetary implications of program commitments over time are clearly shown.

Once a set of projects has been selected and combined into a plan, this plan is reviewed by budget officials. Changes may be suggested because of funding constraints. Eventually, perhaps after a series of discussions, a project set and a budget are agreed upon and approval is granted to proceed with implementation.

During the evaluation and monitoring of project and program implementation, contact is maintained between budget officials, planners, and other administrators. If implementation lags are discovered, action is initiated to get the plan back on schedule. If this is not possible, budget modifications will probably be necessary.

The planning phases just discussed have been separated for clarity. They tend, however, to merge at their boundaries: project identification and development occurs in the course of information-gathering; strategy formulation takes place in the context of budget constraints; decision-making goes on at all levels and in all phases, from choice of research topics, to proposal of alternative action programs, to decisions on matters of highest policy.

Planning as a Hierarchical Process

The concept of planning set forth entails a wide range of continuing decisions at various levels associated with each aspect of planning. Considering these decisions in a hierarchy is useful.

At the top of the hierarchy are intersectoral allocation decisions that are largely made outside the Ministry of Education. For the most part, the sectoral planner is concerned with allocations of resources within the sector budget which is largely determined from above by the national development plan and the treasury. The latitude for allocation changes is very limited in the short run. Ongoing programs require continued support. The margin of free resources for reallocation—after paying most of the fixed expenditures for salaries, ongoing construction programs, materials, pension programs and other commitments—is quite small. But in the long run, the cumulative effect of marginal resource allocation decisions can be very large.

In any event, the sectoral planner's sphere of interest (and the subject of thi[illegible]scussion) is how to utilize most effectively a limited budget to make the various subsystems within the education system more efficient. Such lower-level analyses of improving the education system's components have usually been overlooked by the familiar, linear approaches to educational planning. Yet, it is these "internal" problems that are of most pressing concern to decision-makers in the education sector: how to make the primary level provide basic science education more successfully, how to produce enough able and effective teachers at a reasonable cost, and how to enable vocational education to equip its graduates with those skills leading to ready employment and higher income.

The highest level of a hierarchy of planning activities involves national-level allocations of resources between the major sectors, including education. Below this level—assuming that a sector budget is fixed from outside—there are other levels of decisions and planning that provide information to decision-makers. The following list is not strictly hierarchical—decision-makers at all levels of administration may concern themselves with various kinds of decisions. A significant planning and administration problem in many ministries is that the highest level officials are often overburdened with low-level decisions, while the planning group that considers high-level allocations lacks high-level authority. There is, however, a general hierarchical relationship between: inter-sectoral allocations (largely outside the scope of this discussion); allocations of marginal resources among different levels (these correspond to the strategy-formulation phase); allocations within levels and types of education (corresponding to decisions made at the program and project development level, say, between science education and general education projects for secondary schools); and questions concerning efficiency and effectiveness within a level or program (such as analysis of pilot programs to increase cognitive learning gains among secondary students, or to reduce unit costs in teachers' colleges).

Distinguishing these types of planning decisions is useful for several reasons. First, the analytical tools most usable at one level are not always applicable at other levels. Linear programming is most effective in obtaining optimal use of available resources, such as teachers or classroom space. Linear programming has been successfully applied to school management decisions, such as classroom scheduling, distribution of centrally provided textbooks, and other low-level planning. One characteristic of such decisions is that objectives are clear and quantitative data are readily available. In more sophisticated applications, such as controlling the flow of pupils through the entire educational system to maximize total economic returns to society, linear programming has had little success in guiding sectoral planning. Worse, because of technical weaknesses, inadequacy of aggregate data, and maximization of single objectives which oversimplify the complex aims of education, the results of linear programming analyses may be seriously misleading.

Second, the kinds of data needed for decisions of one type differ fundamentally from those of another type, especially in the degree of specific detail needed for meaningful analysis. Manpower studies indicating the approximate balance between graduates and jobs can utilize highly aggregated data from national manpower surveys. But whether vocational education programs should stress general or specific skills or should include a work-experience semester requires much more detailed, longitudinal studies of vocational graduates. Estimates of enrollment growth based on entrance trends and promotion rates may give general projections of places needed. But more detailed studies of population growth, age, and residence are necessary to plan the location of new school buildings.

Third, some decisions—those dealing with day-to-day operations—are highly important. A five per cent saving in primary level unit costs has a huge impact on the total education budget. Yet theoretical work on planning and allocation has mostly addressed the highest level allocations, and most data gathered do not apply to low-level efficiency questions. National level rates of continuation (that is, the proportion of each entering grade cohort that remains in school) tell us little or nothing about how well a curriculum experiment works in a local school district. Budget data on expenditures do not indicate where the funds for secondary education or teacher training were spent or what was accomplished.

These last points are crucial to the problem of planning for sectoral development. Frequent and important decisions are usually made by sectoral level administrators without analytical tools, and with inadequate data. There are of course exceptions. Cost-benefit analysis has been applied in interesting and useful ways but, unfortunately, such exceptions have been rare. Cost-benefit analysis has been used where monetary benefits, such as benefits from manpower training programs, can be readily identified and causally linked with the education program.

In summary, planning relates to the question of financial resources for education in several ways: it permits accurate projection of resource requirements; it promotes efficiency in terms of high-level allocations between major programs to achieve complementarities and consistency; and it promotes lower-level efficiency in the operation of individual projects. The best-known approaches to educational planning (that is, the manpower approach, the rate of return approach, and simple quantitative projection techniques) have serious shortcomings. These include emphasis on high-level efficiency achieved only by altering the relative enrollments in different levels and types of education; inadequate attention to educational costs, ways of reducing them or their accurate projection; and almost total disregard of evaluation of program effectiveness at the lower level. These well-known approaches also tend to be one-way processes leading to preparation of a medium- or long-term plan document, rather than to integrated continuous processes based on feedback from the present educational programs in action and closely linked to the annual budgeting and the lower-level decisions that take place in the sector.

An alternative planning approach is proposed, emphasizing not only high-level strategy formulation but also considerations of educational program performance and internal effectiveness. Such an approach would provide a better basis for projection of resource requirements, greater efficiency in resource utilization, and a closer link to the annual budgeting process.

PLANNING-PROGRAMMING-BUDGETING (PPB)

Program budgeting is a formalized approach to educational planning. It focuses on developing and assessing alternatives, improving the context of choice, and comparing the outputs of different programs designed to achieve the same objectives. It draws attention to the desirability of spending for one objective in relation to other educational priorities. Program budgeting leaves ultimate decisions about programs to the decision-maker; it hopes only to sharpen decisions by developing and displaying relevant data.

Methodology: Systems Analysis

The underlying methodology of program budgeting is systems analysis. Systems analysis is any kind of orderly, analytical activity addressed to complex problems of choice. All such choice situations concern decisions among competing alternatives for educational investment that differ in pay-off or output. Clarifying the potential impact of such decisions not only on the educational product (the student), but also on other parts of the educational and national environment, and on subsequent program decisions, is one task of systems analysis. The effect of present system decisions on future ones is a crucial consideration of any good systems analysis. Here the close relationship between planning and systems analysis is clear: systems analysis determines the nature of the present educational system and defines the nature of the future system; planning indicates how best to move from one state to the other.

Systems analyses include five distinct stages. First, they try to rigorously define the problem at hand. This is a crucial undertaking, since the apparent problems may not be the real ones. Problems also may change as the analysis attempts to define them.

Secondly, systems analyses attempt to work out a hierarchy of particular, realistic objectives whose attainment will solve the problem.

Thirdly, systems analyses organize and display a range of alternatives for achieving those objectives.

Fourthly, systems analyses associate costs—or resource requirements—with each alternative. Often these costs are very similar, but they can vary widely.

Finally, systems analyses attempt to relate resource inputs to program outputs; they explore the processes by which expenditures for different program alternatives have more or less efficient and effective outcomes. In this final step, the crucial question of *criteria for effectiveness* arises. Without such criteria, the analyst cannot evaluate program performance or relate program performance to costs in order to measure efficiency.

In the program-budgeting context, these five basic steps of systems analysis are elaborated upon as follows:

- formulating the problem
- articulating the objectives

- constructing alternatives
- costing alternatives
- assessing potential effectiveness of alternatives
- modeling the relationship between cost and effectiveness
- improving the effectiveness criteria
- evaluating alternatives according to these criteria
- reiterating this sequence

Despite the importance of cost and effectiveness modeling here, it is important to realize that systems analysis demands approaches other than the purely quantitative. Quantitative approaches are most appropriate when enough is understood about the problem to be able to break it down into discrete parts and to benefit from increased precision. Problems about which less is known can be dealt with through qualitative, heuristic, and analog models. These models can increase one's understanding of the problem and of the consequences of different alternatives for solving it. The important point is that quantitative methodologies are not the only focus of systems analysis; the analytical technique actually used in a particular case depends on problem complexity, validity of currently available data, and understanding of the process being studied.

Limitations of Systems Analysis

First of all, analysis is always incomplete. The time frames of short- and medium-range decisions leave the analyst little time to discover all the detailed impacts of competing alternatives or to conduct a conclusive analysis. Also, since systems analysis continually cycles back upon itself as problem dimensions change, a "definitive systems analysis" is impossible by definition. As emphasized in the preceding section, analysis and decision-making are continuous processes.

Secondly, analysis is limited to proxy or surrogate measures of performance because projected program performance is a very elusive quantity. Such measures are substitutes for the more refined evaluative measures used after an alternative has been implemented. They only approximate "actual" program performance, and they often will not support highly specific or refined quantitative manipulation.

Thirdly, since predicting the future is impossible, systems analysis cannot forecast or project absolutely reliable program performance data. This is true even for programs similar to ones evaluated in the past because each new implementation involves factors that may change performance characteristics.

Finally, the systems analyst may have attention bias; he may perceive the problem in ways that depart from the real-world problem. Because every analyst's interests and experiences bias his attention, the conscientious analyst attempts to assess and eliminate his attention bias. This attempt is important because a program structure that incorporates inappropriate attention bias is often useless.

Documentary Elements of PPB

The *program structure* is a hierarchy of categories that accounts for the various activities of a system, whether it is a federal government or a rural school. It is possible to build program structures—i.e., to create categories and subcategories—based on a number of different viewpoints. Program structures can be built according to curricular divisions, age-grade divisions, goal and objective divisions, and many others.

The program structure determines the way in which data about various programs can be collected and analyzed. Hence, the program structure must be designed to answer particular kinds of questions that the administrator or policymaker asks. The inevitable attention bias of the program structure must be the decision-maker's own bias.

Resource, cost, and *effectiveness analyses* are used to evaluate present and potential programs and to fit them into the categories called for by the program structure.

The *program budget* is derived from the structure and the cost models. It costs out system activities by program.

The *Multi-Year Financial Plan (MYFP)* projects the cost implications of current programs over a period of years. These projections are crucial because the long-range cost changes of competing alternatives can differ greatly from their near-term costs.

The *crosswalk* relates costs aggregated by program to costs aggregated by more traditional line-item divisions. Such a document can show, for example, how much is being spent for central administration in relation to each of seven programs. It can also help those unfamiliar with program budgeting to make sense of the new budget in the old, line-item terms.

The *program memorandum* documents the alternatives that have been considered, their rationales, the criteria used to evaluate these alternatives, the reasons why some alternatives look better than others, and the justification for recommending one alternative over all others.

An *issue analysis* is used when an issue appears that does not seem directly relevant to the basic program structure but that is important and cuts across program lines. By conducting and publishing this kind of analysis, a systematic perception of the issue's resource, cost, and effectiveness implications can be derived.

Imbalanced Implementation of PPB

As already indicated, PPB is an elaboration of systems analysis designed to be of maximum utility in planning and management and its structure is implicit in the series of program documents provided by that process. Both its structure and process are relatively straightforward and have excited little controversy. In implementing PPB, however, many practitioners disagree vehemently.

It is very easy to emphasize one aspect of PPB at the expense of others, forgetting that the PPB approach balances a range of planning, budgetary, control, analytic, and information issues. There are several biases in the implementation of PPB.

Budgeting Bias Many imbalanced implementations stress budgeting and define PPB as a system in which the budget is operationally transformed. The budget not only aggregates and displays annual expenditure proposals, but also introduces goals and alternatives into resource allocation decisions. It is used as an instrument for analysis and for incorporating analysis in actual resource allocation decisions.

Those who overemphasize the budget aspects of PPB cite three reasons for their approach:

—The budgeting process is the arena where resource allocation decisions are scrutinized and analyzed.

—Resource allocation decisions actually are made through the budgeting process.

—These resource allocation decisions are explicitly communicated, made operational, and effectively formalized through the budget.

Budgeting-oriented implementation has many shortcomings. It produces information more appropriate for accounting than for planning or analysis. It is too rigid to improve decision-making in many organizations. In sum, it overemphasizes the importance of budgeting in the decision-making process. Frequently, this kind of implementation produces nothing more than a change of accounting procedures that use analysis only to justify budget requests.

Goal and Objective Bias The basic idea here is to enable administrators to see and define more clearly their own goals and objectives, and PPB is defined as no more than a planning and control mechanism which states goals and objectives and examines organizational activities to see how they contribute to these objectives.

Those who advocate this form of imbalanced implementation cite the following reasons for their approach:

—The effectiveness of an activity cannot be evaluated unless objectives are stated.

—In competing for resources, organizational units often overemphasize their parochial priorities and ignore the general purposes of the organization.

—Trade-offs between objectives must be made. If the objectives are not clearly defined, administrators may unknowingly weight some objectives much more highly than others by incorporating their own biases, by overweighting more easily measured objectives, or by utilizing an inaccurate intuitive model describing the relationships among these objectives.

Yet goal-oriented implementation also has severe shortcomings. In many organizations, defining goals and objectives is extremely difficult and may be very time-consuming. Goals and objectives often differ across the same decision-making level and throughout the decision-making hierarchy. Moreover, since politicians are reluctant to define their real objectives clearly, a goal-oriented approach to PPB can produce a very general, politically influenced set of pseudo-philosophical goals. Because such goals are unrealistic, they cannot aid decision-making or help to change existing activities.

Integration Bias A third common implementation error arises because PPB is an integrated system that uses many familiar concepts and techniques. According to advocates of this form of implementation, the most important aspect of PPB is that it combines these concepts and applies the total package to decision-making.

Clearly, this integrated procedure approach to implementation does not overemphasize any one part of PPB, but it does have its own major shortcomings.

First, it is difficult to apply this integrated approach to PPB in education. Secondly, attempting to implement all parts of PPB at once can be extremely costly in terms of manpower resources and monetary expenditures. Thirdly, some of the procedures and required documents of PPB are absolutely essential, while others are useful but not essential.

The errors of integrated implementation may be avoided by asking one question: What are the central questions which educational managers must answer, and what management concepts and techniques are needed to answer those questions? This query will prevent practitioners from wasting too much effort on implementing documents and from ignoring more helpful concepts and techniques.

Information Bias In this case, PPB is defined as a system to provide more and better information for planning programs and for choosing among alternatives.

The rationale of an overemphasis on information includes the following arguments:

—More environmental information is needed for planning purposes.
—More evaluative information is needed to analyze present programs.
—More cost information for present and future years is needed.
—More research information is needed to predict impacts of alternatives.
—Present information flows need to be better structured and organized so that decision-makers can actually use the data.
—There is a need for more decision-oriented information-gathering.

The major shortcoming of this approach is that it may be even more ineffective and costly than the other implementation errors already considered. More information does not necessarily imply better decisions. Without a conceptual framework for resource allocation decisions, or the realization that information is just one part of the decision-making process, vast stores of data are highly counterproductive.

Program Bias This approach overemphasizes the hierarchy of goal-oriented activities and the program structure that form the framework for planning, systematic analysis, and budgeting. Unfortunately, program analysts often emphasize a rational and comprehensive program structure at the expense of a structure useful to decision-makers. Ideally, the program structure should highlight key policy and budget decisions, stimulate administrative reform, and enable decision-makers to confront specific activities; but it is almost impossible for one program structure to serve decision-makers effectively in their diverse functions of planning, programming, and budgeting.

Balanced Implementation of PPB

There are many forms of imbalanced PPB implementation. The examples already cited are only a sample of implementation errors. But what is balanced implementation?

The meaning of balanced implementation can be clarified by examining the most frequent criticisms of program-budgeting implementation. Most of them relate to two major problem areas: the distortions inherent in program structures and categories, and the behavioral obstacles to implementation.

Structural Problems

Problem: One problem that occurs in many applications of program budgeting is the lack of a clearly focused program structure. Government agencies can be confused about whether the structure is designed primarily to assist top-level decision-makers or to help department or regional heads (middle management).

Solution: This confusion is neither likely nor serious when implementation is balanced, gradual, and diversified. Such implementation begins with a structure designed to serve the central office, but that structure evolves in a decentralized way as the lower levels of the education system develop their variations on central office objectives and programs. Thus, the program structure comes to serve all organizational levels, though the program categories are oriented toward the central office. Although evaluation, analysis, and budgeting must remain central office functions, evolution of the program structure should be a cooperative effort. Significant aspects of program development should be a major responsibility of lower-level departments and/or branches.

Problem: Many critics contend that program budgeting inherently stresses the paperwork over the product—that building a program structure, collecting data, and preparing program documents become more important than developing more effective programs and improving resource allocation.

Solution: The key to solving this problem is to explain the real meaning of the forms to be completed; ongoing workshops in the aims and methods of program budgeting prevent overconcentration on paperwork. Also, implementing PPB at all levels of the organization, and not just from the top down, can dispel the notion that PPB paperwork is no more than "another bunch of forms for the central office." Thus, as lower-level programs emerge, personnel at those levels become aware that the procedures they follow and the data they provide directly affect their own activities and achievements.

Problem: A third, and more serious contention is that program budgeting and program structures inherently direct analysis to budgeting and not to policies.

Solution: The problem seems to depend on how the program structure is built. If it is designed for management and control and shaped by budgeters and the line-item budget, it naturally will reflect budgetary concerns and direct analysis toward those concerns. But if the program structure is designed for planning purposes and built by structural analysts, analysis will focus on policies.

Still, the interpenetration of budgetary and analytic concerns can seriously hamper the development of better policies. To insure that analysis will occur where it is needed for policy decisions, PPB implementation should separate analytic from budgetary concerns by creating a central analytic staff sufficiently capable and independent to operate without recourse to the budgetary branch.

Problem: Another objection is that program budgeting produces vast amounts of data that inundate the decision-maker but have little meaning because they are not causally related.

Solution: There is no reason to believe that this problem is inevitable. A meaningless flood of data results from poorly designed, understaffed PPB systems. Such systems do not have an analytic staff sufficiently large, skilled, and diversified to digest and interrelate data and to present specific recommendations and alternatives. Hence, the distinction between the analyst and the decision-maker is blurred, and the administrator must perform analytic tasks for which he has little time or training. An effective implementation effort solves this problem by relieving the analyst (or analytic branch) of line responsibility, and the decision-maker of analytic tasks.

Problem: The last of these structural problems is the supposed inadequacy of program memoranda. Some critics say that program memoranda are simple reflections of current policy—or products of organizational compromise—instead of careful analyses of alternative programs.

Solution: It is easier to write a standard program memorandum calculated to please the central office than to produce a searching analysis of program cost and effectiveness; and most organizations tend to take the easier route. Yet program memoranda are stagnant and meaningless only if those who create them know little of what the memoranda are supposed to be and do, and have little stake in the documents or in improving existing programs. Implementation, therefore, should include training sessions to educate people about the meaning and consequences of program documents. This training is reinforced by a decentralized responsive system that will show all personnel that they have a real stake in the documents submitted to the analytic branch. PPB of this type helps line operators and administrators to articulate desire for change in terms that are useful for program memoranda.

Behavioral Problems

The second major group of criticisms covers problems more behavioral than those already considered.

Problem: First among these problems is the contention that program budgeting exposes and increases organizational conflict by forcing opponents to state their cases explicitly, in terms of cost and effectiveness.

Solution: PPB does underline organizational conflicts; but unless such conflicts are brought to light, they cannot be resolved rationally. Though it may be disruptive at first, clarifying conflicts ultimately benefits the organization by illuminating the bases of decision-making.

Problem: Critics also contend that PPB increases organizational conflict by disrupting the pattern of "budgeting by political bargaining" among conflicting interests.

Solution: In many organizations, budgeting by political bargaining leads to gross inefficiencies; education can only benefit if this process is disturbed and changed. Again, training sessions can facilitate change by helping budgeters understand the purposes of program budgeting, and to realize that the greater power to secure funds comes from analytical presentation of budget requests. Moreover, separating the analytic from the budgetary organization insures that all bargaining (or trade-offs among departments, districts, and programs) will relate to resources and effectiveness, and not just monetary costs. Comprehensive and balanced implementation leads budgeters to advise analysts, to translate needed resources into dollars, and to refrain from bargaining that is susceptible to political considerations.

Problem: Closely related to the previous objection is the belief that program budgeting poses a real threat to lower-level personnel and budgeters. Critics contend that such people are accustomed to insularity and routine, and so resistant to change that program budgeting may be unable to involve them without being sabotaged.

Solution: Whatever resistance lower-level personnel may have should change to advocacy if they understand that a decentralized, responsible PPB system offers them more and better opportunities to influence program development.

In summary, program budgeting is a formalized approach to educational planning. As a result, it implies the implementation of an integrated management system. The purpose of the system is the organization of information about policy choices. The focus of the system is, therefore, on the development and evaluation of options for the key decision-makers within the educational ministries of developing countries.

In order to organize and develop useful information for policy and managerial purposes, program budgeting uses system-analytical approaches and techniques as its fundamental mode of inquiry. The development of analytically useful information concerning educational options assumes construction and interpretation of relevant resource, cost, and effectiveness data for all options under consideration. The analysis of alternatives for policy development is clearly the purpose and most important undertaking of the program-budgeting system. The distinctiveness of the program-budgeting system is that when well implemented it provides a regular and continuing scheme for the organization and reporting of critical data for the analysis of program options. The system provides for the production of several output documents: a program structure, a program budget, a cross-walk, a multi-year financial plan, and program memoranda. These documents represent the results of activities in the five main areas of the program-budgeting system: analysis, management, budgeting, evaluation, and information retrieval.

Program budgeting is no substitute for decision-making. It merely adds to the judgment of policymakers information which can assist them in determining the implications of the choices they must consider.

CHAPTER XIX

Data for Analysis and Decision-Making

THE preceding chapter discussed planning and program budgeting as ways to project fiscal resource needs and to promote efficiency for better use of resources. A change in the orientation of planning and the use of program budgeting have been proposed here for the purposes of creating greater efficiency. An essential ingredient of the proposed planning approach, and of program budgeting, is for availability of special kinds of data—especially, data on program performance. Most countries have a superabundance of data of various types, but these data do not permit analysis of program efficiency. They tend to be descriptive and to permit identification of problems, but seldom indicate ways of remedying the problems and increasing efficiency. In particular, the data available on costs are incomplete and poorly organized and, as a result, they do not permit program budgeting.

This chapter discusses criteria for determining usefulness of data. The general criteria for data include user-orientation, economy, flexibility, relevance, simplicity, timeliness, completeness, accuracy, and accessibility. Specific operational characteristics of data for planning and program budgeting that include policy-relatedness, disaggregation, and cost-effectiveness of data gathering are also analyzed.

THE NEEDS FOR DATA

Inadequate educational planning and administration in developing countries is often attributed to a severe lack of relevant data. Data merely describing education systems have been both incomplete and unreliable in many countries. Here, descriptive data include: data on enrollment, wastage, repetition; on the number, qualifications, and distribution of teachers; and on the costs of existing educational programs. But even if these descriptive data were complete, systematic analysis of policy choices and expenditure decisions require still other kinds of data.

Sophisticated data, such as performance data, are rarely available.

Performance data indicate how well various levels and types of education achieve their goals. They include data on examination scores; on subsequent performance in later schooling; and on employment and income after leaving school. Data on program performance are essential for cost-effectiveness analysis, program budgeting, and other analytical approaches to improving system efficiency—including program planning, implementation, and evaluation.

It is paradoxical to discuss a lack of educational data when most countries possess abundant statistical series and reports on education. Some ministries even suffer from data glut. A profusion of virtually useless data only clogs information channels, physically and conceptually. Some existing data are useful or essential; many are not.

At best, data ordinarily available to ministries tend to permit the analyst to say that something is wrong: enrollment and population data show low enrollment ratios; wastage data show excessive dropouts; or manpower data may show shortages or surpluses of a given type of education. Usually, the data are highly aggregated and do not reveal more than the surface of a problem. It is impossible to tell from, say, national population and enrollment figures whether under-enrollment is a general problem or mainly a rural phenomenon. Even in the unusual case where census and enrollment data are broken down by comparable urban and rural zones, the relationship between variables such as parental income and attendance cannot be investigated. In short, standard gross aggregates provide no insight into the causes of the problem or where to seek a solution.

A different kind of data is needed to identify possible solutions to educational problems. Different variables relating to programs or activities within administrators' policy control are needed to transcend mere problem identification and to begin to indicate positive solutions. For example, consider excessive dropouts. Assume that aggregated data indicate the problem exists, that a school lunch program has been considered as a possible solution, and that a pilot program will be initiated in one or more clearly defined regions. Some data determining the program's "starting point" must be gathered before beginning the pilot program—a need that is rarely recognized. The prior data-gathering should include: census data available for the pilot area, and the age groups involved; and the prevailing levels of attendance and enrollment prior to the pilot program. Such data establish a basis for comparison with later data to show the program's impact. Where a general upward trend in enrollment ratios exists, a control group may be useful to check the program's impact against this general trend. Data on changes in enrollment, attendance and dropouts will provide the basis for assessing the program's impact. Detailed data on cost variables will be needed to determine not only the impact but also the cost-effectiveness of the experimental program. The combined data would permit decision-makers to ascertain the number of pupils which the lunch program induced to attend or remain in school; the program's total cost; and the average cost per additional pupil-years of attendance. The lunch program example shows the kinds of data that might be needed for analyses and policy decisions.

SOURCES OF DATA FOR MINISTRIES OF EDUCATION

There are two main sources of data in Ministries of Education. The first consists of regular reports written for various administrative reasons. Enrollment data are maintained because financial grants or teacher assignments are often based on the number of pupils enrolled in a school. In some countries, attendance data are also maintained and reported. Information on pupils repeating a grade—a first or second time—tends to be unnecessary for administrative purposes, so full and reliable data on repetition have not been available in most countries, at least not until recently.

The second kind of data is that generated by special studies and research. Sometimes administrators have required that data be collected regularly for added information, such as data on repetition, and not because some administrative function required the data. These special data become part of the regular information base. In other cases, the Ministry of Education requests special, one-time studies, such as an inventory of school buildings and facilities. Such data continue to be available, but unless they are adjusted periodically through additions to and withdrawals from the stock of school buildings, they quickly become outdated.

Other kinds of special-purpose data come from outside studies made available to ministry policymakers. These studies may be performed by other public agencies, such as periodic household surveys of the Census Bureau or by private researchers. The special studies provide potentially useful information to augment regularly reported data.

Data on program performance have not been gathered regularly in most countries. The need for information on program accomplishments has not been recognized, so the "natural" or automatic reporting used for enrollment data has not occurred. There are also other reasons why performance data are not reported. First, there are technical difficulties. If objectives are obscure, it is not clear what should be measured. Some measurements, such as examination scores, have questionable validity.

Second, there are bureaucratic reasons why educational personnel—including teachers and school administrators—resist performance measures. If available, performance indicators might impose a burden of accountability that does not now exist. Most everyone from teacher to school administrator to regional administrator would prefer to have full freedom of action, rather than be judged by such performance indicators. For these reasons, information on the results of educational programs are not generally available.

All of the difficulties mentioned above are real. Gathering performance data is not easy. But there can be improvement on the present situation. The movement to establish operational objectives and instruments to measure their accomplishments at the micro-level has gained considerable momentum. Efforts to improve and extend these instruments are continuing. Applying economic analysis to education has led researchers to consider not only achievements in school but also future employment and earnings as a measure of effectiveness. The same principle can be applied to measurement of non-monetary objectives, such as future performance by graduates of specific programs in later schooling.

Administrators at all levels need questioning, and evaluation-oriented attitudes. These will not be developed easily or without costs, but it can be done. The effect on educational data and, ultimately, on performance would be highly significant and useful.

Practical problems cause difficulties with even the most basic type of data-gathering and they differ from country to country. In some countries, climatic conditions or harvest seasons create different scheduling of the school year in different regions. This complicates the problem of providing basic enrollment data on a uniform time-basis. Double-sessions make it difficult to determine the student-teacher ratios. Universities with large part-time enrollment and part-time faculties find it hard to measure either enrollment or staff on a full-time equivalent basis. Data on private education are also usually hard to obtain. These particular problems require specific solutions, but the principal focus of this chapter is on the general criteria for useful policy data.

General Criteria for Data

There are nine basic general criteria: data should be oriented toward the user; economical to gather; flexible; relevant; simple; timely; complete; accurate; and accessible.

Obviously, some of these criteria conflict with others. No set of data can be perfect, and administrators and planners must "trade off" improvements in one characteristic dimension against sacrifices in another. For example, complete data may not be available on as timely a basis as partial data; more detailed and "flexible" data may be more costly to gather than more highly-aggregated data.

The discussions below merely indicate the nature of the criteria. Only administrators using the data can decide how the trade-offs should be made.

Data Should Be User-Related Analysts trying to use data often find that they are compiled on a basis that prevents working with them. In budget data, to cite an important example, expenditures are usually categorized by item—such as "textbook expenditures," or "vehicle costs," or "chalk"—rather than by function, by educational level, or by major item of expenditure. A primary problem in implementing a program-budgeting system is that of categorizing expenditure data to permit meaningful analysis of expenditures. Any form of categorization has shortcomings—as program-budgeting practitioners have learned.

But it is possible to make major improvements in categorizing expenditure and other data on those patterns generally used in developing countries. The basic step of calculating unit costs—such as teaching costs per student, or administrative cost per student or per school—often greatly improves the information content or "insight value" of cost data. Gathering data in the most useful form is often hampered because administrators do not know what questions to ask, that is, for what purposes the data will be needed. Time and effort spent in clarifying these questions at an early stage avoids costly and often useless data-gathering later on.

Achieving user-relatedness is a two-way process. Administrators need to give careful consideration to their information needs as much as planners and statisticians. Some points discussed under operational characteristics of data directly concern user-relatedness.

Data-Gathering Should Be Economical Information-gathering is costly. "Automatically reported" data may cost less to gather than data requiring special efforts, but even automatically reported data must be compiled, transmitted, tabulated, stored, and retrieved. Costs of handling data should be reduced where possible. But this has often been done by omitting detail with a resulting loss of important information.

The most effective cost-saving method is to determine the variables needed for measurement and analysis *before* major new information systems are established. Like efforts to determine users' needs, time spent in specifying variables can bring major savings later. In the majority of education systems, most pupil data include enrollment by sex. Knowing this may be useful for some purposes, but the costs and work of gathering and tabulating all pupil data by sex should be carefully considered. There may be less expensive alternative sources of the information needed, such as use of sampling techniques or classification by sex only at specified levels.

Special-purpose studies are the most expensive source of data but they can be the *most cost-effective* way to get needed information. If regular reporting sources do not yield data on key variables and if the information's value justifies gathering it, then special-purpose surveys or samples are needed. If well designed, these can produce information at reasonable cost. But the capability to design surveys has usually been scarce in Ministries of Education. Again, the best way to reduce the costs of information is to determine clearly what it is that needs to be known.

A Data System Should Be Flexible This can mean that some series may be added or dropped on a flexible basis, and this may be desirable. Some national statistical publications are burdened with tables and series that are no longer needed and that should be discontinued. There is a conflict here between such flexibility and the need for consistency and continuity in published series. In some cases, series could be dropped from publication with the raw data maintained for a while in case a user may need it.

Data should also be gathered and compiled so that they can be used for many different purposes. This is not a simple or inexpensive task. The principal way to accomplish analytical flexibility is to maintain a fairly high degree of disaggregation and specificity. Maintaining detail on individual units of analysis—such as the school—permits cross-tabulation and multivariate analysis. If a survey of teacher qualifications is made, it should be possible to relate its data to, say, studies of pupil performance or of educational costs. Flexible relationship of variables for different analytical purposes greatly increases the usefulness of data.

Data-Gathering Should Be Simple Compiling data regularly or for special purposes can cost more than the benefits of the information gained. The cost and effort required to gather the data may not be worth it to the educational system. This conflict between benefits and costs of data-gathering should be considered when planning any regular series, or a special study.

Data Should Be Available on a Timely Basis Obviously, information needed for an annual budget must be available at a certain time. In other cases, rapid compilation and presentation of data are less critical but still important. Data made available long after they are gathered may be obsolete before they reach the analyst or decision-maker. Rapid feedback of information is of great importance, especially in evaluating new or experimental programs. Timeliness of data availability conflicts with completeness, degree of detail and, to some extent, accuracy. Using sampling techniques rather than full surveys, eliminating some detail, and using estimates instead of definitive measurements, say, of costs—all allow for more rapid data-gathering. But sampling-error, loss of important information by omitting detail, and possible inconsistencies between estimated and directly measured data reduce the effectiveness of these methods. The administrator must decide how to weigh these alternatives. Sometimes having imperfect data when needed is better than having perfect data too late or no information at all.

Data Should Be Complete All too often data are regularly gathered for merely a portion of the education system. When a number of ministries conduct educational activities (i.e., vocational training may be provided by a wide array of agencies), or when the private sector is significantly involved, compiling data on merely a part of the broad educational system may cause erroneous policy conclusions. In at least one country, overlooking the role of private teacher-training colleges caused serious overinvestment in public teacher-training facilities. While some uses of data may not require completeness, comprehensive data should be available to provide a full perspective on the educational system's major aspects. The degree of completeness of data series should always be made quite clear to the user.

Data Should Be Accurate The goal of accuracy is not as simple to achieve as it might seem. As noted earlier, sometimes using estimates rather than direct measurements gives greater speed or economy. One initial step to improve accuracy is to identify and guard against possible biases in reporting. If grants or teacher assignments are based on enrollment, there is a strong incentive to inflate enrollment figures. Attendance may likewise be over-reported because low attendance rates reflect badly on teachers and administrators. Besides such biases, possible interpretation errors or mere clerical errors should also be checked. Spot verifications of accuracy are useful. There are also internal checks on consistency. Separate series should give the same totals; tables can permit cross-checking of clerical accuracy. But in many cases, accuracy is a relative, not an absolute matter. Data-users may have to accept a reasonable degree of reliability and should not expect perfection.

Data Should Be Accessible Basically, this means data should be published to make them accessible to all types of users. Openness with data will increase a user's trust in the data and allow verification. Accessibility also involves quick availability of information internally for analysis. Electronic data processing and improved storage and retrieval have produced major improvements in this area. In cases where disaggregation leads to large quantities of detailed data, machine processing, especially, may make it possible to minimize physical limitations of data handling. But establishing large "data banks" may be costly and useless unless the information system is carefully planned to permit access to the data. Once again, it is crucial to know the uses the data will be put to when the information system is designed.

Operational Criteria of Data

Besides the general criteria already discussed, there are some characteristics needed for data used in policy analysis, such as policy-relevance; relevance to the unit being observed; relation to educational performance and costs; and cost-effectiveness of data-gathering. Not all of these characteristics will occur in a single data series. But ideally the full set of data made available to decision-makers should include all of these characteristics.

Data Should Be Policy-Relevant To further elaborate on the point that data should be gathered for specific information needs, data should relate to variables over which decision-makers have some policy control. A study of the relationship between wastage and family income by region may reveal strong correlations between the two. But because educational decision-makers have no control over family income, such a study may provide little more information than what intuition would have provided and offers no guidance for policy. Rather, studies measuring the burden of school fees, private costs of education (clothing, books and supplies), and the subsidy levels needed for children to continue schooling would produce information that is a useful guide to action. The ultimate value of information for planning and administration lies in the guidance it provides for action.

Data Should be Disaggregated and Specific to the Relevant Unit Observed Aggregated data cause information loss, especially of insights into program performance and effectiveness. In some studies, the unit observed may be the school or the class, but even this much aggregation may obscure what happens to individual pupils. What is needed are data on the relationships between "treatment" variables (teachers, texts, or experimental programs) and their impact on pupils' performance. Information on such relationships calls for micro-analysis of educational functions.

It should be possible to relate one variable to another in a particular study, either in simple cross-tabulations or by multivariate analyses. Separate studies of individual variables can be an improvement over what had been a total absence of data. But the scope, flexibility, and usefulness of data are greater if two or more variables can be related. This calls for considerable, precise detail, which involves higher costs. The costs may now be reduced by machine-processing of data.

Data Sets Should Measure Educational Performance The need for and difficulties of obtaining performance data were discussed in the introduction to this chapter. Once again, the key to improving data systems, analysis, and policymaking lies in asking the right questions. Questions concerning how well the education system is working, or what variables influence its success, have not been asked—often because no data were available on which to base answers. Well-designed research can prevent wrong or irrelevant policy questions based on inadequate data. This need has not been recognized or understood—even in developed countries—until recently. The circle of wrong or irrelevant policy questions and inadequate data for sound policy analysis can be broken with well-designed research. Data can help improve educational effectiveness by simply indicating what is effective.

One means of gathering data on educational performance is through longitudinal studies which trace graduates of various levels as they progress through higher levels of education or in their work experience. Because direct measurement of an educational program's effectiveness is often difficult, other indicators of accomplishment may be obtained from the later experiences of graduates. Cross-section studies cannot provide as much information as longitudinal studies. Single evaluations of programs after their completion often do not provide information on the causes of success or failure. But data obtained by tracing individuals are quite useful in explaining the effectiveness of these programs. At the very least, "before and after" measurements should be made. But even this need has not been fully acknowledged in education.

Data on Costs Are Necessary The need for data on costs has been almost as much overlooked as that for performance data. Cost data are important for the most basic tasks of management, budgeting, planning, and control of educational organizations from the school to the national system. Even the most straightforward projections of budget requirements are impossible without sound, reliable cost information. But besides descriptive measurement and control uses, cost data have a most important analytical role. They are essential to cost-effectiveness analysis. Together they provide the basis for informed choices on achieving the greatest possible improvements with the resources available.

Data-Gathering Should Be Cost-Effective Cost-effectiveness analysis should not only be applied to educational programs, but also to the development of a data system. If a study's costs are too high, it should not be performed. Or, ways should be found to get the same information at lower cost.

One means of reducing data-gathering costs is through sample studies. The reliability of sample studies (given certain conditions) is not generally understood by non-statisticians. Few administrators in developing educational systems recognize that a well-designed sample survey can produce policy information virtually as accurate as a complete census. Nor are administrators aware that sampling can improve the manageability of data (by avoiding data-glut), reduce costs, and increase the speed of analysis. Sampling can often produce useful policy information more effectively than full surveys. Proper design of the sample frame, randomization, stratification (if desired), and so on are not difficult to achieve. Unfortunately, many developing countries do not have able statisticians to perform these tasks nor administrators sufficiently aware of the values of sampling.

Because special studies are often needed to obtain policy data on performance costs, and so on, and because of the costs of ad hoc data-gathering, sampling is a way to reduce the costs and other burdens of such studies. As already noted, some criteria for data will conflict with others. Because sampling reduces costs and increases the ease of data-handling, it can act to relieve some of the constraints on data-gathering and remove the need to trade one desired characteristic for another. Particularly with longitudinal performance studies and investigation of costs, sampling techniques make possible policy research that has rarely been done before in developing countries due to cost, time, or manpower constraints.

The level of competence in data management and analysis in developing countries is generally low. Considerable competence is needed to design information systems efficiently, to minimize data-gathering costs, to provide the specific information policymakers need, to invesitgate performance and costs through sound analytical techniques, and to use sampling methods. This is an area where technical assistance and training efforts of international agencies can make a most significant contribution in improving the quality of information. This, in turn, can lead to major improvements in educational effectiveness in developing countries.

CHAPTER XX

The Administrative Context of Planning, Budgeting and Implementation

THERE are many administrative and organizational issues that bear upon planning and budgeting. One in particular concerns the way educational resources are distributed and the efficiency with which they are used. The degree of centralization or decentralization of the administrative process affects the distribution and efficiency of educational resources.

Education systems in developing countries tend to be highly centralized which may contribute to efficiency because decisions are more directly related to implementation. But highly centralized administrative systems may be more rigid and difficult to change than decentralized ones and may also involve serious inefficiencies when breakdowns in communication across many hierarchical levels occur.

The degree of centralization affects not only efficiency in various ways but also the equitable distribution of educational services to different groups. Centralization results partly from factors of power and politics. But it also results from the regional distribution of income, the ability of various regions to generate fiscal resources for education, and the degree to which tax revenues are drawn from export taxes and other centrally collected revenues. There are various pressures for the decentralization and "democratization" of educational administration, and these will be felt increasingly in developing countries as levels of education and political consciousness rise in outlying regions. The issue of whether educational administration should be centralized or decentralized is complex.

The following discussion involves some major factors to be considered in making this decision. These include the system of incentives that induces lower-level administrators to perform efficiently and implement programs effectively; the flows of information upward and downward in the administrative hierarchy; and the interaction between administration and planning. Factors relating specifically to planning in a centralized or decentralized system include goal hierarchies; qualitative standards; economies of scale; and interregional and inter-group equity.

The relationships between the degree of centralization, the ways in which resources are used, and the nature of the planning and budgeting process are also complex. This chapter will explore the various issues involved and will consider the factors that influence the degree of centralization and the arguments for more or less centralized control. A recent example of a decentralized, self-regulating system of financing education is included.

CENTRALIZATION VERSUS DECENTRALIZATION OF EDUCATIONAL ADMINISTRATION

Most educational systems in developing countries are highly centralized. The reasons for this are partially political, partially economic, and partially bureaucratic; but the concern here is not why systems are centralized but what effect this has on educational finance and the efficiency of delivering educational services. There are also strong relationships between the degree of centralization and the flows of information in the system, which will be discussed below. But first it will be desirable at the outset to clarify what is meant by centralization and decentralization and how administrators achieve efficiency in each organizational context.

Centralization implies that more than one level of authority exists. Educational administrative organizations are hierarchical. There are many organizational patterns, but most systems have a layered structure along the following lines:

—*An executive level:* the Minister, Deputy-Minister, Director-General, Chief Financial Officer, etc.

—*Specialized executive agencies:* planning office, inspection branch, etc.

—*Functional or level-specific divisions:* primary, secondary or vocational education, teacher training, etc.

—*Major geographic subdivisions:* regional, state or departmental offices.

—*School-level administration:* principals or headmasters of individual schools.

These major levels are sometimes subdivided with differing degrees of autonomy and authority. How much the decision-making authority is concentrated toward the top of the hierarchy reflects the degree of the organization's centralization. In a centralized administration, all decisions would be top level. The lower levels would merely carry out directives from above, without any delegated or discretionary authority.

There are two basic ways top-level administrators can promote efficiency: via directives to lower levels that require actions leading to high levels of goal accomplishment; or through an incentive system that makes lower-level officials perform efficiently because it will be in their own best interests. A more highly centralized administration uses more directives, delegating relatively little authority and allowing lower-level officials little discretionary action. In a fully decentralized system, few or no directives are issued by higher-level officials. Choices by lower-level officials are guided by incentives. In such a system, top-level authority and individual autonomy are separate.

The degree of centralization or decentralization can also vary between levels within a many-layered system. The executive level may delegate much authority to the functional groups. These may then operate in a very centralized manner, issuing their own directives. The regional office may exert rigid controls over schools, but this could still give teachers much autonomy in classroom activities. Generally, however, a system that is centralized at higher levels tends to be centralized at lower levels as well.

Centralization and decentralization rarely exist exclusive of each other. Even the most monolithic educational systems have many decentralized elements. Policy decisions may be made centrally, but the implementation and interpretation of policy must necessarily be done by many functional and regional administrators; thus providing a degree of decentralization. An important portion of the administrative and decision-making process takes place at the most decentralized level—the school, where education occurs between pupils and their teachers.

But even a highly decentralized education system is influenced considerably by different central bodies. Education in the United States is somewhat centralized at the state level—and some states are as large and populous as some developing countries. Other important sources of central control are the national examining bodies that administer the "College Board" examinations, which exert a strong influence on all schools. Regional accrediting boards have a strong voice on school standards. Federal funding and regulation of categorical programs also serve as a centralizing force.

The question is not a distinction between total centralization or decentralization, but one of degree. Most developing countries have relatively highly centralized education systems with national ministries that establish policies and procedures for all public schools, as well as regulations and standards for most private education. One important reason for this is that at low average levels of income and with relatively weak tax structures, individual communities cannot pay for education with self-generated resources. Central funding (often based heavily on export and import tax revenues, taxes on major crops, corporate profits, etc.) is conducive to centralized administration. So a consideration of centralization versus decentralization as it applies to developing countries really involves a discussion of an existing, relatively centralized pattern of administration versus a system with a somewhat lesser degree of centralization.

There are several factors that should be weighed in choosing the degree of centralization or decentralization in a particular national context.

The Incentive System A decentralized education system operates on broadly delegated authority and decentralized decisions based on a workable incentive system. But because educational systems, in general, have unclear goals and outputs that are difficult to measure, an effective incentive system is difficult to achieve.

A corporate manager may leave product divisions quite free of directives from above. He can give the division manager nearly total autonomy because periodic statements of the amount and rate of profit clearly show how well the division performs. The division manager will perform as efficiently as possible because pay, praise, and promotion are based on his division's profits. But the high-level educational administrator cannot generally operate in this way. He has few indicators of how well the system is performing—and none of them is as clear as profits. The administrator in developing countries tends to issue directives of an administrative nature only, such as establishing teacher qualification requirements, class days per year and hours per day, pupil-teacher ratio requirements, and textbook choices, without specifying precise educational goals—without which there can be no valid measurement of performance. For this reason, an effective incentive system is more difficult to achieve in the educational systems of developing countries than elsewhere.

Thus, there are definite limits to decentralization in the educational systems of most developing countries. But this condition may change with improvements in goal clarity, and instruments for measuring accomplishment. Such changes, although minor, are happening already in some countries. In Malaysia, where the Examinations Syndicate operates a national system of standardized objective testing that permits measurement of cognitive gains, a first step in this direction is being taken. But much more work is still needed to clarify goals, develop and adapt test instruments, and establish performance incentives. As this work proceeds, some necessary conditions for decentralization will be realized.

Information Flows One purpose of a decentralized educational system is to gather and compile information on the functioning of the country's educational system and on interregional differences in educational services. Such an overall view of the national educational system is most successfully achieved by an administrative system that issues directives on what information should be gathered and when. But there is no natural incentive system operating to produce a uniform and complete data-base, and there is no automatic process for selecting or generating data which are useful for policy purposes. For example, a program-budgeting system requires data that is often difficult to gather. Such data may even reflect poorly on the lower-level administrative unit. For these reasons, many agencies have resisted implementing program budgeting. A strong centralized system may be able to implement such an information and budgeting system more successfully than a decentralized system.

An argument for decentralization concerns information flows. Hierarchical administration requires information flowing downward as directives and upward as responses to directives, indicators of activity, and general background data. Transmission of information is costly and tends to impede effective administrative action. And in a centralized, many-layered system, the information tends to get blurred with many transmissions—information is often lost, misinterpreted or distorted, and the message received and acted on may be quite different from the message sent. Finally, the flow of information down through the hierarchy and back up takes time which causes delays in decisions and implementation. Faulty or delayed information then leads to inefficiency costs, in addition to the costs of preparing and transmitting the messages. Thus, a centralized administrative system designed for efficiency has within itself the seeds of inefficiency. The more decentralized the system, the shorter the routes of information.

Planning Centralization may be necessary for effective planning. Central planning that takes into account the system's total operation can avoid waste, duplication, and working at cross-purposes. Strategic national planning can only be carried on when the highest level goals are taken into account. Lower-level planning according to this argument tends to be narrow, since it may tend to overlook both broad national goals and developments in other parts of the system.

But centralized planning may be too aggregative and general to be useful to local-level administrators. Generalized plans are often ill-suited to particular local situations. Plans made centrally often lack the valuable on-the-spot knowledge to make them effective locally and stimulate successful implementation. Centrally planned school building specifications that ignore local climate or geography or availability of materials are good examples. Therefore, it can also be argued that planning for expansion should be made locally, guided by national-level objectives.

The best solution is a combination of centralized and decentralized planning. This requires delegating greater authority than most developing countries' education systems now permit.

THE INTERACTION OF ADMINISTRATION AND PLANNING

There are several basic areas that must be considered in studying the interaction of administration and planning. These include: hierarchies of goals; national standards of quality; economies of scale; equity and compensatory programs; possibilities for change; availability of scarce manpower; and social implications.

Hierarchies of Goals Goals differ at different levels of the administrative hierarchy. Top-level administrators are concerned with broad national goals; lower officials are concerned with their own department or branch and with preserving their own position and perquisites. The specific problems which administrators deal with also vary at different levels of the hierarchy. Top administrators, for example, may be concerned with possible overproduction of secondary-school graduates, while state administrators may be trying to meet more of the local demand for secondary places in response to political pressure. While national officials are trying to reduce unit costs, local officials may be trying to get as many luxuries for their schools as possible. The issues differ and the analytical approaches that facilitate decision-making also differ. If the incentive system operates effectively, then administrative planning and control can be highly decentralized. But, as indicated earlier, the system of rewards in the local school system is not linked to effective achievement of national goals.

National Standards of Quality A decentralized decision-making system permits widely differing standards of quality. Even if funds are distributed equally, they may be used differently. If funds are generated locally, community willingness or ability to tax themselves to provide quality education may vary greatly. According to proponents of centralization, high standards of educational quality can only be achieved through uniform nationally set standards for class hours, pay scales, training requirements, textbook supply, etc. They also argue for a national system of accountability to assure compliance with the standards. But the opposing argument holds that rigid and pervasive standards stifle experimentation and alternative approaches to providing educational services. National standards may, for example, prevent using paraprofessional teachers and diverting resources thus saved to other useful purposes in the education system.

If reliable performance information were available, an incentive system would permit decentralization and foster local experimentation to give the children the best possible education with the available resources. Without such information and incentives, national directives that allow for justifiable exceptions may be the only recourse.

Economies of Scale Some functions and aspects of education involve reduction in unit costs with increased size of operations—economies of scale—and call for centralization. Local authorities cannot train teachers efficiently, particularly specialized teachers. Teacher-training institutes in large and populous regions may be feasible, but again may call for national standards of quality in teacher education. Development and testing of new curricula can best be done through the research resources of national authorities, although local improvements in methods of applying and implementing curriculum change may be very valuable.

For large-scale purchases of materials and equipment, centralized purchasing agencies may achieve economy through their greater bargaining power. But administrators should carefully consider the full costs of central purchasing because savings might not exceed the added costs of distribution. There are also possibilities of delays and loss of flexibility involved in central purchasing. Finally, there is the use of scarce administrative manpower to manage a purchasing and distribution operation that could be handled in the private sector.

Where there are possibilities for improved efficiency through larger-scale operations, moves toward centralization are justified. But, in general, some activities should be centralized, while others are handled better by relatively autonomous lower-level administrative units.

Equity and Compensatory Programs In decentralized systems such as in the United States, community differences in wealth lead to major differences in educational services. The only way to redress imbalances in a decentralized system lies in progressive general taxation and revenue transfers—possibly earmarked for education—to lower-income communities.

In a centralized system where most funds come from the national treasury, equal funding on a per capita basis can foster greater equity. Where special compensatory programs offset some effects of socio-economic disadvantage, these can also be administered directly through centralized education systems. Policies to provide equal educational services to all areas, or compensation programs for disadvantaged areas must by their nature be made at the national level. This argument does not imply that the total administration of education should be centralized. But it does imply a need for centralization to achieve uniform national standards of quality, centralized provision of teacher training—which cannot be supported by poorer regions—, some central funding of education, and an information system that fully measures the expenditures on education in different regions.

Possibilities for Change Qualitative and quantitative development of education systems means changing established practices in various ways. It can be argued that smaller, decentralized administrative units can adopt and implement changes more readily. But there may be resistance to proposed changes by many local authorities, causing change on a national basis to be slow or incomplete.

Centralized administrations, it would appear, can simply command changes and issue directives to implement new policies. But the changes ordered at the top may not be actually carried out at lower levels. A new science curriculum based on the teaching approach of "discovery" may be adopted nationally. But even with workshops and in-service retraining, many science teachers throughout the country may continue to lecture as always. Supervision of implementation can be carried out much more effectively by local administrators. The point here is that lower-level administrators should be involved in decisions on a new policy, not simply informed from above, so that they will understand and be committed to the policy and strive to implement it.

Availability of Scarce Manpower It is sometimes argued that because most centralized systems in developing countries do not have enough able administrators, decentralization would create impossible demands for administrative talent. But from another point of view, managerial ability can hardly be developed in a highly centralized system. Initiative, decision-making ability, and innovativeness are stifled when lower-level administrators have few choices. In a sense, demand for administrative ability will create its own supply, although a hasty transition from a highly centralized system to a highly decentralized system will probably create a manpower vacuum. In the long run, managers who learned to exercise delegated authority at lower levels would tend to assume central ministry positions and ease the manpower shortage there. Thus, decentralization might serve to strengthen all levels of the hierarchy.

Social Implications Transition from a centralized to a decentralized administration would significantly affect the attitudes and motivation of the system's personnel. True participation in management and actual authority in operating that part of the system they control would cause lower-level administrators to function more effectively. This would make the education system more efficient. There has been more participatory management and democratic decentralization in business management in recent years. The same principles could be applied to public educational administration.

Greater decentralization would certainly bring the expertise of lower-level administrators into the decision-making process in a way that a highly centralized administration would not permit. Effects on planning, quality of information, adaptability of broad policies to local circumstances, and, ultimately, on program implementation would be beneficial. But it should be noted that the motivational effects of increased decentralization are greatest when information on program performance and administrative success is reliable, and where an effective system of rewards for efficiency and effectiveness operates successfully.

SUMMARY

Neither extreme of centralization or decentralization is likely to work in practical situations. Mixtures of management by both directives and incentives will probably work best. The key factor is information on program performance and efficiency that would permit incentive-based management institutions. This in turn calls for development of clear goals, new instruments for measuring performance, and a high level of research and information-gathering. These factors are also necessary for sound planning and program budgeting. There are some indications that such developments will occur in time, but rapid changes are unlikely.

Even if the conditions for successful decentralization exist, there are some cases in which centralization leads to greater efficiency than decentralization, such as in programs with economies of scale, in national strategic planning, in the establishment of national standards of quality, and in the transferring of funds to achieve interregional equity.

But in other situations, the delegation of authority offers more important advantages. Among these are shortened lines of communication, faster response, greater sensitivity to particular local problems, important changes in administrators' attitudes and motivation, greater freedom to experiment and innovate, and closer control and supervision of program implementation.

The educational systems of many countries operate under administrative arrangements that have not changed in accordance with changing circumstances. Better information, better management techniques, and the availability of more able junior administrators might facilitate decentralization. Greater economies of scale might be achieved by performing some activities centrally that were once delegated to local authorities. The "best" administrative arrangement must be determined by particular local circumstances.

This discussion has attempted to avoid prescribing a general pattern. But it is hoped that it has indicated a basis on which to re-examine existing administrative patterns. Changes in administrative organization can significantly affect the efficiency with which scarce resources are used, the success of plan implementation, the equitable distribution of educational services, and the "environment" for educational innovation and change. These factors, in turn, have an important effect upon educational resource needs, and the benefits that derive from educational investments.

A RECENT CASE OF DECENTRALIZATION

A new mode of financing education has recently been instituted in Yugoslavia. This plan decentralizes financing so that post-primary education can be better adapted to the needs of local and regional communities. The plan is intended to re-orient educational institutions toward a decentralized and self-regulating system of financing.

Principles of the Plan

This financial plan is based on the following principles, enunciated in the law.

First, because education is one of the fundamental forces influencing production, it should be closely related to economic development.

Second, educational policy should be planned for efficient use of educational resources. Conversely, a realistic evaluation of current resources and a projection of future availability should influence policy planning.

Third, locally oriented decision-making should foster self-management and self-maintenance of educational systems. Such a decentralization of educational authority and implementation will help realize the first two principles.

The orientation and implementation of the financing plan was developed from these principles.

Organizations that Finance Education

Education is financed within each Yugoslavian republic (similar to provinces) through a series of four organizations: the worker associations; the educational associations; the republic associations; and the socio-political associations.

The Worker Associations All workers are organized by categories of employment. They form associations concerned with training future workers in their field. These worker associations are empowered to establish the areas of educational need, formulate policy, set aside funds, and evaluate results. These worker associations are responsible for collecting the majority of resources used for education, mostly in the form of taxes.

Educational Associations These associations administer the financing system. One educational association formed in each county within a republic is composed of representatives from each of the worker associations. Their administrative powers are left to the discretion of the worker associations which chose to give up these powers when creating the county educational association. Through the worker representatives, these associations determine how resources will be spent and they administer those funds.

Significantly, an educational association determines what educational programs are needed in the county. Technically, they finance programs, not institutions. They contract with educational institutions that agree to provide a certain program at a given per-pupil price. These contracts establish long-term arrangements. Certain aspects are fixed in the contracts, such as categories and volume of educational activity; escalation of costs and mode of payment; other rights and obligations; and the percentage of funds for physical and curriculum improvements and for expanded educational services.

The educational association integrates all social factions interested in education. Thus, it can influence the direction of specific educational programs and, at the same time, coordinate an overall educational policy within its jurisdiction.

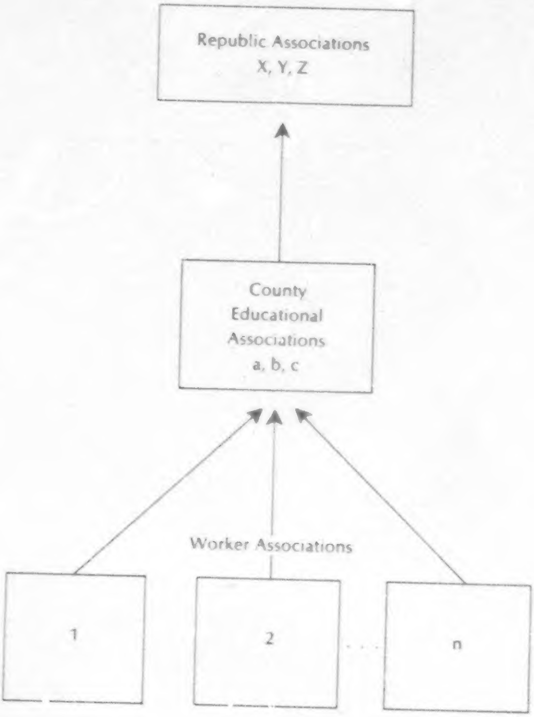
Republic Associations These associations were originally established temporarily as transitional committees to institute the new financial plan. There is one association for each republic. The republic associations are composed of representatives from worker associations, elected from the educational associations. Republic associations influence the general direction of educational activity and also influence the allocation of resources from governmental budgets.

More specifically, they are concerned with the finances of universities, scientific research at these universities, and adult and special education.

Such republic associations probably will be slightly reorganized in the next few years and will remain as permanent coordinating bodies of the financial system for the republics.

Socio-Political Associations These associations are government organizations of various levels, including the Communist Party organizations. They are involved closely with long- and short-term educational policy and are represented in the educational associations. They finance all preschool and primary education. They also provide some scholarships and some funds for unusual educational expenses. In addition, they give technical assistance to both educational associations and institutions.

The following diagram summarizes the organizational structure of the Yugoslavian financing system: within one republic, the many worker associations in each county send delegates to a county educational association. Each county educational association, in turn, sends delegates to its republic association.



Resources for Educational Financing in Yugoslavia

Resources are collected by the worker associations. They are used to fund educational programs of particular interest to the worker association, as well as some common programs designated by the county educational assocation. Some funds collected may be set aside for investment in education at a later date. The resources remain within each republic and, usually, within each county. There is neither a mandate nor any effort among counties to equalize their funds. The poor counties receive financial assistance directly from the government of the republic they belong to.

Funds in this financial plan come from two basic sources: 70 per cent comes from a tax on personal income, and ten per cent is derived from a tax on "transport." The remaining 20 per cent comes from other sources, including contributions from agricultural organizations, other socio-political organizations, and from individual citizens. A few worker associations also contribute additional funds to build technical schools related to their work. Some citizens contribute funds directly to schools, rather than to educational associations. The amount of the revenue used to meet the operating costs of educational institutions is 94 per cent. Administrative costs of the educational associations require five per cent of the resources. The remaining one per cent is invested. Educational associations allocate funds to educational institutions on a per-pupil basis rather than on the basis of total costs of a curriculum. Allocation is essentially made on a quantitative rather than qualitative basis.

Advantages and Disadvantages of the System

The main advantage of the Yugoslavian system of educational finance is its potential to decentralize both resources and decision-making. Workers have a potentially greater say about the nature and direction of the training for their work, in particular, and the nature of education, in general, than ever before. This comes about through their tighter control of resources, matriculation policy, and curriculum content. As the first of the plan's basic principles indicates, resources are closely allied to communal needs and goals. But this advantage also results in a corresponding disadvantage. Decentralized activity and centralized long-term planning are basically incompatible. Decentralization does not facilitate cooperation beyond very limited boundaries. Educational problems are viewed from a local perspective, not from a republic or national one. The decentralized focus also makes transferring funds from one educational area to another difficult, and transfer of funds between counties or republics impossible. Therefore, the advantage of a close link between resources and needs is easily negated when needs beyond the local level become legitimate. Local control can be both advantageous and disadvantageous, depending upon the goals.

Another potential disadvantage of this Yugoslavian plan is the feasibility of adequately representing all interest groups. The educational associations may become too unwieldy to efficiently administer an educational system. Other problems may develop when one faction dominates the others so much that some legitimate educational needs are unjustly subordinated.

The Yugoslavian financial plan for education is still in its initial stages. In a few years, a thorough study will be necessary to evaluate in depth its strengths and weaknesses.

CHAPTER XXI

Educational Contracting

EDUCATION has been contracted for since ancient times. Then, as now, a contract—often a written one—could clearly set forth the learning procedure and its goal: the master would agree to train a student in prescribed skills for a fixed fee. But there was no recourse when attainment was low; rarely did such contracts promise money back if goals were not achieved.

Since the second half of the 19th century, a new element of protection has been introduced in public education: the performance contract where payment depends upon results.

A BRIEF HISTORY

Education contracts existed in ancient Egypt, Babylon, and Greece. For apprentice weavers, millers, bakers, stonecutters, cobblers and carpenters, the contract specified the length of service and fees. The study of medicine and law were also contracted for in a master-student relationship, as was sculpting and even flute playing.

Medieval apprenticeship contracts for merchant, trade, and craft guilds specified lengths of service and/or fees due in return for the skills attained, in the slow progress from apprentice to journeyman to master.

In Elizabethan England, private and charitable apprenticeship agreements were common. Parishes were required to provide education for the poor through apprenticeship programs.

In Victorian England, insufficient school places; an inadequate monitorial system; the gradual prohibiting of child work (under ten) during school hours; demands for visible demonstration of value received for money spent; and general alarm at increased grant costs—all led to a system of payment by results.

Robert Lowe's "Revised Code of 1862" embodied the principle of payment by results. It decentralized treasury power and made the educational system serve the nation—independent of the political and religious ideologies of the Whigs and Tories.

Standard tests classified children, and minutely detailed work schedules were provided for each level. Grants were paid to school managers and were determined by attendance and results on the annual exams. Grants could be withheld if the inspectors were dissatisfied with the school's physical condition or if teachers lacked certification.

This system did provide efficient and less expensive education in Victorian England. But it was discarded before the turn of the century because its learning was mechanical and rote, and it neglected the very bright and the very slow children—teaching was geared only for success on examinations. Teacher-inspector relationships were also disruptive to learning. This system did prove, however, that performance standards can be quickly raised if the goals were limited to only the mastery of a highly structured content, especially one that tended to be examination oriented.

In America following Frederick Taylor's principles of efficiency and scientific management, his disciples criticized the American schools in 1910 for their waste, losses, and inferior graduates. A business-conscious society pressured educators to experiment with standardized tests and efficiency ratings.

Taylor, himself, had made no claims of originality for his shop-management principles of workmen's tasks, which were prescribed in a definite time with measured progress and accompanying satisfaction. Rather, he spoke of those good results from his schoolboy days when the teacher set up clear-cut tasks for systematic progress.

The occasional dissenters against "shop-management" were ignored. The time for humanistic values, the arts, depth of scholarship, and meaningful interactions between pupils and teachers was yet to come.

PERFORMANCE CONTRACTING

Today basic educational philosophy and structure are being questioned. Social, political, and economic issues, and demands for innovation, choice, efficiency, and accountability of results have intensified the search for new educational alternatives. Performance contracting is such an alternative. It contains a basic control factor—accountability. This will be discussed along with the scope of performance contracting, types of contracting—external and internal—and a sequential model of a performance contract.

The Agreement The contractor agrees to improve student performance levels in specified basic skills by set amounts; or, to achieve other specified goals. He is paid according to his success in bringing student performance up to pre-established levels. If he succeeds, he makes a profit; if he fails, he is not paid or is paid less. Within the guidelines of the school board or other educational authority, the contractor may use whatever instructional equipment, techniques, or incentive systems he feels will work.

The nature of the agreement may vary widely in terms of proposal bidding (sole-source or competitive); sources of funds; procurement of managerial support; and the schedule of payment.

The Basic Control Factor: Accountability All performance contracts involve an independent evaluation to measure the results and payments contingent upon those results. A performance contract holds the educational contractor accountable for results; it is awarded after bids and includes warranties, penalties, and incentives; it requires that educational planners quantify their goals and utilize such proven educational engineering techniques as system analysis and management by objectives.

The independent audit of results—usually by a local, independent educational audit organization—allows taxpayers and their representatives to judge the educational yield of a given appropriation.

Scope of Performance Contracts At present, educational performance contracts are mostly limited to compensatory skill achievement programs in reading and arithmetic. These programs overcome differences in the starting points of children from different social groups. They are intensive and supportive, helping those children who perform poorly in normal classroom work.

The potential for performance contracting beyond remedial education should be studied. Achievement scores may not relate directly to skills needed for ordinary schoolwork. Nor do they predict future student achievement—especially, that of students motivated by an innovative curriculum with wider choices based on individual needs. With a sufficiently high achievement—at a rate of return that is equal to or better than conventional instruction—performance contracting could offer schools greater flexibility and adaptability.

"Open schools" where outside firms are contracted to teach for a specified payment, based on results, might also include released time for clinic or learning-center attendance outside the school. This would increase parental choices and competition between school systems and outside contractors.

External and Internal Performance Contracting In an external performance contract, a private contractor enters into an agreement with a school or school board to increase student achievement through the use of equipment and personnel brought into the system.

The internal performance contract is similar, but teachers replace the private contractor. They submit bids—handled by their teacher organizations—to the board of education as subcontractors for the duration of the programs.

A Sequential Model of a Performance Contract The local education agency receives venture or development capital and hires a management-support group to consult in drafting a request for proposals. This request specifies goals, services, money to be invested, penalties, observable constraints, acceptable standards, and related matters.

A pre-bidding conference is held to exchange ideas and fully particularize the request. The revised request is issued, bids are entertained and reviewed, and the performance contract is negotiated with the successful bidder. After the performance contract is signed, an independent-educational-accomplishment-audit group is hired to monitor contract execution and certify results to the local educational agency.

The program becomes operational and after a specified time and evaluation, the local educational authority will end, renew, "turn-key," or incorporate the program into the school's curriculum.

Recent Experience with Educational Contracting

Most models presently in use specify payments for results in dollar-defined bonuses and penalties. A testing audit is done by an agency other than the performance contractor.

Some of the key differences between various models center on personnel (comprising either an external private contractor, a learning center, or an internal staff already employed); pay formulas which include the dollar amount per child per grade advance; average increments and pay in relation to time spent; and the contract's duration and mechanism for re-negotiation or termination.

Other differences include: measuring methods; reading or math achievement scores; ways in which students are motivated—free time, tokens, prizes, etc.—and the basis on which students are measured—the entire school, dropouts, disadvantaged students or those tested below grade equivalents.

Some Difficulties Encountered Thus Far The innovative approach of performance contracting programs has received national attention but the studies so far have indicated some basic difficulties.

Evaluations found that these programs did not accelerate achievement among the disadvantaged, regardless of the particular form, site, or the quality of the pupils. Evaluations also showed that the contracting programs tended to emphasize gains in scores on standardized achievement tests. The programs did introduce curriculum changes and concentrate on individual instruction, but students did not improve markedly. The costs were higher than conventional instruction but about the same as compensatory programs.

Problems Common to All Types of Performance Contracts

Any new approach will raise problems. The overall existing structures do not have the flexibility of the small programs which performance contracting introduces into the schools. The basic problems caused by differences in approach center on three areas.

Problems in Testing Test scores have always been unreliable. The physical environment, the timing, instructions, and the student's attitude—all influence results. Specific achievement tests focus on particular types of problems; conceptualizing and synthesizing are more difficult to test. Criterion-referenced tests measure specific competence but not the ability to learn; as a result they are poor indicators of future school achievement. In general, they measure non-cognitive results sporadically, if at all.

Overall, the use of standardized testing in performance contract programs involves an inherent testing weakness: long-term retention is ignored and short-term learning is the basis for contract reimbursement.

Problems in Funding Central Government funds are the main source for educational performance contracts today. If poor or negative results dry up these sources, a local school district may not be willing or able to fund its own performance contract. In needy areas, state financing might replace federal support. Private learning centers might also be operated, supported by parents and subject to their choices for various skill achievement programs.

A Critical Analysis of Performance Contracts

The performance contract has a wide range of possibilities. Awareness of its flexibilities will permit an analysis of the basic advantages and disadvantages common to all educational performance contracts.

Advantages The strong points of performance contracting include: precise identification and sequencing of needs and goals; greater efficiency in determination of class size and in reduction of lost class time for slow students requiring individualized instruction; and innovation in teaching techniques to help busy—and especially inexperienced—teachers, supervised by trained personnel.

Performance contracting also provides: financial incentive for teachers to excel, since compensation is based on quality of service, not hollow credentials; opportunity for applying business management skills to save taxpayers' money through open bidding and more efficient operation; opportunity for experimentation to explore curriculum innovation with low costs and low political and social risks; and independent evaluation as a control factor to make the performance contractors accountable for results.

The most important consideration should be the benefit gained by the child. The tailored, individualized instruction based on diagnosed needs captures the lost, the lagging, and the discouraged child. He can compete only with himself. He works with proper guidance and at a rate that is not frustrating. He is actively involved in learning and is aware of progress that is being measured by clear and attainable goals. He becomes a happier child in a less threatening situation.

Disadvantages The weaknesses of educational performance contracting include manipulation of the child to insure higher test performances and higher profits, and total reliance on tests that measure only a narrow segment of total learning objectives; thus disregarding attainments in the social, psychological, and civic domain. There are also implementation difficulties which occur because of inadequate training programs; use of unqualified personnel to reduce overhead costs; and the reluctance of contractors to invest in or commit various resources because of the short-term duration of the contract and its uncertainty of renewal.

Other weaknesses include: relocation of personnel because of new programs, with a resulting loss of continuity, modification of decisions on distribution of school resources and on hiring and firing teachers, as well as on selecting educational materials; and the violation of previously negotiated contracts by enforced transfers changed pupil-teacher ratios, merit increases, or pay losses where experienced staffs risk low remuneration for low performance results.

There are other disadvantages that become evident to the child, the school, and the performance contractor. One of the most significant of these is that the child may be encouraged by the program to expect material rewards. In the school, the division of responsibility becomes confused. It is not always clear who is in authority—the principal or the learning contractor. Sometimes, contract teachers and regular teachers work at cross-purposes or are regarded differently by the children. The "original rapport" and "good will" do not always resolve such administrative questions over an extended period.

The contractor may be forced to enter higher bids because of extremely heavy penalty clauses. The need for starting simultaneous projects may decrease his supply capacity, or both decrease competition and raise bids. Contractors whose programs use learning systems may shift their emphasis to straight hardware sales or consulting rather than follow through in implementing the overall change needed.

Summary Discussion

The performance contract precisely defines the objectives and measures the goals of new programs. These draw on ideas, talent, and technology from beyond a particular school system. They can bring the best new ideas into operation within the traditional school system, with limited risks. The performance contract (which is a legal document, either with private companies, or, internally, with existing personnel) prescribes both the student achievement and the payment for attaining these goals. Above all, a performance contract guarantees what students will actually achieve.

The most serious dangers of performance contracting involve the child. Scientific management that increases skills must not also inhibit student creativity and initiative. The sense of individual dignity and a respect for democratic values must be preserved. Children are not factory products whose quality can be sacrificed for efficiency and economy. Scientific management that makes the contractor accountable for results should adopt business values efficiently, but it must not dehumanize schools.

USES OF PERFORMANCE CONTRACTING IN DEVELOPING COUNTRIES

Educational performance contracting may be useful in developing countries—when adapted to local conditions. Contracting with private firms to educate children in elementary and secondary schools—as in the American programs discussed here—is unlikely. The objections to this type of contracting raised in the United States would be even stronger in developing countries. Inability of private firms to undertake sizable programs in schools, and difficulty in identifying outputs and in evaluating programs will be much greater obstacles in developing countries. But, educational contracting may be useful in two basic ways.

Internal Contracting When teachers replace the private contractor, the monetary rewards for students achieving higher proficiency levels go to the teachers as a group. In developing countries, education programs are adversely affected by a compensation system that stifles teacher motivation and by an inertia within the system that opposes any change. Internal contracting could provide an incentive to motivate the teachers to adopt change. The changes in curriculum and staff needed to achieve new and higher goals need not be seen as an added burden. Instead, these changes could be welcomed as ways to help teachers get a bonus.

The use of internal contracts would also impose discipline on the teachers in the group. This self-discipline is very much needed to achieve higher educational goals because the results of one educational level, or single year, depend on the attainment reached during the previous level or year.

Educational Contracting for Specific Training A government could contract with a private firm to train persons for a specific job. The goal could be either gainful employment in the particular occupation, or passing entrance examinations required by licensing and hiring boards, unions, etc. Such contracts can produce a minimum level of income for the firm during the training period, which is then supplemented with large bonuses when satisfactory outputs are attained. This type of contracting could become a particularly useful tool when a developing country wants to have training for a number of specialized occupations done by foreign firms. Most contracts in the international training field today are of the fixed input type —such as payments for a given number and type of inputs. A shift to the performance and output evaluation type may very positively affect the outcomes, producing better programs and better students.

A similar arrangement could be used to train technicians and specialists in foreign countries. Today, when nationals are educated abroad, there is no way for the government to insure the quality of its trainees. If an educational contract is agreed upon by the government and foreign institutions whereby the institutions are paid according to results, these institutions will take more care in selecting candidates and in providing suitable curricula and teachers.

Although at the present time there are no performance contracts in operation in developing nations, some special types of performance contracting should be given a chance. Pilot projects could easily be set up to see if these types of education and training with explicit accountability are feasible.

CHAPTER XXII

Financial Distribution Formulas and Increased Efficiency

WHEN financial authorities have limited operational control over authorities who provide education, the methods of distributing funds can be an important factor in increasing the efficiency of an educational system.

This chapter describes the most commonly used formulas for fund distribution. It also suggests new ones for equalizing expenditures per educational unit, equalizing educational processes, equalizing educational outputs, increasing participation rates, inducing curriculum changes, and for reducing the number of dropouts.

Although these proposed new formulas are not presently in use, they may serve as guidelines to help implement educational policy.

BASES FOR ALLOCATING FUNDS

Funds are generally allocated on the basis of fixed or variable amounts per educational unit. The educational units discussed below are the student; the teacher; and the class, or student place.

Allocating Funds on a Per Student Basis The most commonly used method for allocating funds is based on some way of calculating the student population, and it is generally based on the number of students enrolled or the number attending.

The number of students enrolled in an individual school may be counted at the beginning of a school year, at mid-year, or even later. This method for reporting students is very often used because of its administrative ease. But it is not a reliable method to use at the beginning of a term because it gives an inflated picture of actual enrollments, since it does not account for dropout and absentee rates.

A modification of this plan is to calculate the average daily membership. The student enrollment is counted daily during a designated reporting period. The count is then divided by the total number of school days during that period, which is generally a regular school term.

In the average daily attendance method, the total days of student attendance at a given school during a given reporting period is divided by the number of actual school days. The reporting period may be a full regular school year, or selected weeks or days during a term.

This method is preferable to the previous ones because it gives school officials considerable incentive to maximize attendance, and thereby reduce the dropout rate: poor attendance may be improved by solving transportation problems or by having teachers give better attention to student problems. Students who are encouraged to attend regularly lessen the probability of their dropping out or repeating grades. There is also little incentive to overcrowd classes, if administrators realize that overcrowding contributes to poor attendance.

In all funding based on the number of student units, local authorities may try raising student-teacher ratios above reasonable pedagogical limits to increase local recurrent budgets. Funding authorities should, therefore, establish maximums for student-teacher ratios.

Allocating Funds on a Per Teacher Basis Because teachers' salaries are generally 60 to 95 per cent of the recurrent costs for primary and secondary education in most countries, educational revenues and/or central aid are often allocated to local school spending authorities on a per teacher basis. This method is either an alternative to the student unit, or a supplement to it.

Teachers are nearly always classified according to level—primary; secondary, lower and upper; vocational or technical; and higher education. Secondary and higher education teachers may be further classified by subjects, such as science, math, language, and social science. Teachers may also be classified according to their level of qualification, and/or whether they teach in rural or urban schools.

Allocating a major portion of recurrent expenditures on a per teacher basis may cause problems in student-teacher ratios. If the funding authorities do not establish minimums for student-teacher ratios at various levels, such local authorities as school directors or area administrators may hire too many teachers so they can fatten their local budgets. This can be avoided by putting a minimum on student-teacher ratios.

Allocating Funds on a Per Class or Per Student Place Basis Capital costs in education are often expressed as an average cost of building a primary, secondary, or vocational school classroom. Funds for capital expenditures are thus often allocated on the basis of a certain amount per class. Classrooms are sometimes differentiated by the school location (urban, rural, or other regional classifications) and by level and type. The size of an average class is generally implied in this unit: some 30-40 students for primary, 20-30 for secondary, etc.

The disadvantage of using a standard classroom unit for allocating capital revenues comes from its tendency to force local school authorities and architectural planners to adhere to traditional building design—self-contained classrooms of similar size and standard arrangements for hallways, offices, and plumbing.

When capital expenditures are allocated according to a standard capital cost per student place (supplemented by appropriate local adjustment factors), the number of students in various categories—such as rural primary students or secondary boarding students—can be used to determine overall funding requirements over a specified time period in a particular region or area. Capital funding based on a standard cost per student place could foster development of various kinds of "combination schools," such as primary-vocational or secondary-general plus technical and/or vocational, and comprehensive schools.

Limits to funding based on capital costs per student place could discourage the building of uneconomical and inefficient small schools. But these limits also frustrate local citizens' desires for village-level facilities, and thus cause political problems. In this case, Central Authorities wishing to discourage the proliferation of small schools could provide financial aid for consolidated or regional schools and develop appropriate facilities for transportation, meals, and boarding for students from sparsely populated areas.

WAYS OF EQUALIZING AND FURTHERING DESIRABLE EDUCATION GOALS

A variation in the amount of money allocated per educational unit can be used to further different goals: equalizing expenditures per educational unit, equalizing educational processes per educational unit, equalizing educational outputs, increasing participation rates, inducing curriculum changes, and reducing the number of dropouts.

The variation in the amount of funds made available can be achieved by weighting the educational units, that is, the students, teachers, and student place. A weighting factor greater than one means that more financial resources will be allocated to that particular unit; weighting by a factor less than one means the opposite.

Equalizing Expenditures Per Educational Unit Financial authorities should provide the same amount for every student in attendance, teacher, or classroom. But the cost of providing various levels of education differs. Expenditures must be equalized at the various levels of education. This can be done as follows: primary pupils may be weighted 1, and secondary students may be weighted 1.8—the total of actual secondary students is multiplied by a weighting factor of 1.8. The resulting weighted total of secondary students is added to the total of primary students. This total is the total number of weighted students in the educational area. In this example, the educational spending authority receives 80 per cent more revenue per actual secondary student than per actual primary student. If the educational unit is the teacher, the weights will also reflect recurrent costs per teacher in a particular type of school—primary, secondary, etc. The same type of weighting can be used to differentiate between different types of education. The following formula can be used to calculate the total amount of money given to an educational institution according to weights assigned to different educational units:

$$M = C_u \sum_{i=1}^{n} U_i a_i \qquad (1)$$

where

M = total amount of money given to an educational institution

C_u = cost per educational unit (student, teacher, class)

U_i = number of education units of type i (by level and type of education)

a_i = weighting factor for education of type i.

Assume there are two localities, A and B, where A has 1,000 children in elementary school and 300 in secondary school and B has 1,600 children in elementary school but has no secondary school. The cost of educating a child in elementary school is $50 a year; in secondary school, it is twice as much.

The following table shows by means of the weighting formula how much money should be allocated in the two districts:

Total amount allocated	Unit Cost	Number of children in primary	Weight of child in primary	Number of children in secondary	Weight of child in secondary
to A	C_u ×	(U_p ×	a_p +	U_s ×	a_s)
M_A =	$50/year ×	(1000 ×	1 +	300 ×	2) = $80,000/year
to B					
M_B =	$50/year ×	1600 ×	1 =	$80,000/year	

Thus, the money to be allocated to A for educating 1,000 elementary school children and 300 secondary school children is the same as that for educating 1,600 primary school children in B.

Equalizing Educational Processes Per Educational Unit Equal expenditure may not provide the same educational services. Costs may be higher in some regions than in others. Teachers may be more highly paid in rural areas than in urban areas, and labor and material building costs also vary locally. Different amounts may have to be spent to provide the same quality of education in different regions. The following formula can be used to calculate these amounts:

$$M_R = a_R C_u \sum_{i=1}^{n} U_i a_i \tag{2}$$

where

M_R = total money for education in region R

a_R = coefficient reflecting costs of education in region R, compared with costs in the nation

C_u = costs of an educational unit

U_i = number of education units of type i (by level and type of education)

a_i = weight for type i.

Using the example given on p. 293, assume that the costs of education in A are 50 per cent higher than in B. Then the amount allocated to A can be calculated as follows:

$$\begin{aligned} M_A &= a_A \quad C_u \quad (U_p a_p \quad + \quad U_s a_s) \\ &\quad 1.5 \times \$50/\text{year}\ (1000 \times 1 + 300 \times 2) = \$120{,}000/\text{year} \end{aligned}$$

Equalizing Educational Outputs Students come to the formal school system from very different economic, social, cultural, and linguistic backgrounds. Identical school processes cannot be expected to provide equal outputs. This is illustrated by marked differences in achievement on tests and in access to secondary and higher education among different ethnic and/or socio-economic classes of students. Students from poor families, minority groups, or rural and remote areas leave the educational system much earlier and do not perform as well as students from more privileged social, economic, or cultural backgrounds.

One way to define equal outputs is by equal knowledge or equal levels of achievement. Every child generally has to pass minimum achievement tests for a specified level of primary or secondary education. Schools, therefore, often adapt their curriculum and teaching methods to students with various types of economic, social, cultural, linguistic, or capability disadvantages so that they can achieve the defined minimum attainment levels as efficiently as possible. Thus, groups of children with certain kinds of educational handicaps will receive more educational resources than children who succeed in the normal classroom situation. Such resources might include language programs for children from minority linguistic or religious groups; tutorial help in particular subjects; diagnosis and treatment services for children with nutritional, medical, visual or hearing problems; and special materials specifically designed for individuals with particular educational disadvantages.

A distributional formula that will equalize educational outputs by accounting for such factors can be expressed as follows:

$$M = C_{ur} \sum_{i=1}^{n} U_{ir} a_i + (C_{ur} + C_s) \sum_{i=1}^{n} U_{is} a_i \qquad (3)$$

where

M = total disbursement

C_{ur} = cost of educational unit of regular students

U_{ir} = unit of regular students of type i of education

a_i = weight of type i of education

C_s = cost of special programs

U_{is} = number of special educational units of type i of education.

In the previous example of locality A, assume that out of the 1,000 children in elementary school, 200 are disadvantaged; that out of the 300 children in secondary school, 20 are disadvantaged; and that the cost of special programs per child is $20 per year.

The amount to be allocated to this district can be calculated, according to formula (3), as follows:

$$C_{ur} \ (U_{rp} a_p + U_{rs} \times a_s) + (C_{ur} + C_s) \ (U_{ps} \times a_p + U_{ss} a_s)$$

$$M_A = 50 \times (800 \times 1 + 280 \times 2) + (50 + 20) \ (200 \times 1 + 20 \times 2) = \$84{,}800/\text{year}$$

Thus, locality A would receive $4,800 more in an effort to equalize educational outputs.

Increasing Attendance Rates The ratio of pupils to children of school age not attending is called the educational participation rate. Most developing countries have rather wide disparities in primary and secondary participation rates from one area to another. Capital cities and other large urban areas have the highest participation rates. Some rural areas may have very low attendance or enrollment ratios. In this situation, financing formulas based solely on attending or enrolled students usually offer no financial incentive, and very little financial possibility for overcoming serious regional disparities in participation rates.

One way to increase participation rates is for the formula to have an incentive feature. More funds are made available to regions or school districts that raise their participation rate. This is achieved by an attendance incentive scale. This scale is a list of coefficients that relate to per cent increases of the rate of attendance on a base-year participation.

The following table representing a hypothetical scale of attendance incentive factors is presented merely to illustrate the principle involved. It is not intended to suggest the actual percentage increase in grants by pupils that might actually be used.

Absolute Increase in Participation Rate from Base Year	Attendance Incentive Factor
1 - 10%	1.05
11 - 20%	1.1
21 - 30%	1.2
31 - 40%	1.4
41 - 50%	1.6
over 50%	1.9

The attendance incentive factor increases more than proportionally as the regional or local educational unit raises its participation rate. This bears out the assumption that it is less costly—both in terms of recurrent and investment costs—to raise the participation rate from ten to 20 per cent than from 40 to 50 per cent.

The formula for determining how much money should be given to a region or school is the same as formula (1) on p. 293, but it is modified by A, the attendance incentive factor, as shown below:

$$M = A\, C_u \sum_{i=1}^{n} U_i a_i \qquad (4)$$

Referring again to localities A and B, assume that A has an attendance ratio of 50 per cent, and B, one of 70 per cent. If the attendance ratio of A increases to 70 per cent and that of B to 80 per cent, and the attendance incentive schedule on p. 296 is used, then the total annual amount given to A and B can be calculated as follows:

Attendance Incentive Coefficient	Increase in Attendance

$$M_A = 1.4 \times 50\,(1000 \times 1 + 300 \times 2)\,(1 + \frac{20}{50}) = \$156{,}800/\text{year}$$

$$M_B = 1.1 \times 50 \quad \times \quad 1{,}600 \quad (1 + \frac{10}{70}) = \$125{,}664/\text{year}$$

Thus, A would receive $76,800 more and B would receive $45,664 more in compensation for the increase in participation rates.

Inducing Curriculum Changes When the curriculum is imposed by local authorities rather than the Central Authorities, various modes of distributing funds can induce curriculum changes.

For example, if the purpose is to foster the introduction of vocational courses and discourage classical subjects, then the formula for distribution of funds can be as follows:

$$M = C_u \sum_{i=1}^{n} U_i a_i \times [1 - \alpha\, (\frac{C}{V} - \frac{\bar{C}}{V})] \qquad (5)$$

where

C_u = cost of a unit of instruction

U_i = unit of instruction type i

a_i = weight of course unit of type i

$\frac{C}{V}$ = existing relation of classical subjects to vocational subjects

$$\begin{tikzcd} & \left(\frac{C}{V}\right)_{max} \\ \frac{\bar{C}}{V} \arrow[ur] \arrow[dr] & \\ & \left(\frac{C}{V}\right)_{min} \end{tikzcd}$$

$\left(\frac{C}{V}\right)_{max}$ = desirable maximum relationship of classical subjects to vocational subjects

$\left(\frac{C}{V}\right)_{min}$ = desirable minimum relationship of classical subjects to vocational subjects

α (alpha) = an incentive factor that is positive for

$\frac{C}{V} > \left(\frac{C}{V}\right)_{max}$, negative for $\frac{C}{V} < \left(\frac{C}{V}\right)_{min}$, and zero for values between $\left(\frac{C}{V}\right)_{max}$ and $\left(\frac{C}{V}\right)_{min}$.

For example, assume that in locality A, the existing relationship of classical to vocational subjects is 80/20, the desired maximum and minimum are 60/40 and 40/60 respectively, and α is .08. If the relation $\frac{C}{V}$ remains the same, then the total amount of money received can be calculated according to formula (5) as follows:

$$M_A = 50 \times (1000 \times 1 + 300 \times 2) \times [1 - .08\,(\frac{80}{20} - \frac{60}{40})] =$$

$$80{,}000 \times .08 = \$64{,}000.$$

If the relationship $\frac{C}{V}$ goes down to 50/50, then the coefficient α becomes zero:

$$M_A = 80{,}000 \times [1 - 0\,(\frac{50}{50} - \frac{60}{40})] = \$80{,}000.$$

However, if the relationship $\frac{C}{V}$ goes down to 30/70, then the coefficient α becomes −.08.

$$M_A = 80{,}000 \times [1 - (-.08)\,(\frac{30}{70} - \frac{40}{60})] = \$78{,}400$$

Thus, the highest amount is received when the relationship of classical to vocational subjects falls between the desired limits.

Reducing the Number of Dropouts In most developing countries, waste because of dropouts is very high. Financial distribution formulas, such as the following, can provide incentives for lowering the dropout rate:

$$M = C_u \sum_{i=1}^{n} U_i a_i \quad [1 - \alpha\,(r_D - \bar{r}_D)] \qquad (6)$$

where

r_D = dropout rate

$\bar{r}_D$ = average dropout rate of the last 3-5 years

and

α = proportionality factor that reflects local conditions.

When r_D is less than $\overline{r}_D$, then $1 - \alpha (r_D - \overline{r}_D)$ is more than one and the total amount of money is increased.

For example, if locality A averaged a dropout rate of 30 per cent over the last five years and the dropout rate has now been reduced to 20 per cent and if the proportionality factor α is .8, then the total amount to be received by A can be calculated as follows:

$$M_A = 80{,}000 \times [\,1 - .8\,(.2 - .3)\,] = 1.08 \times 80{,}000 = \$86{,}400/\text{year} \quad .$$

Thus, A will receive $6,400 more per year due to a reduction in the dropout rate.

SOME OBSERVATIONS ON FINANCIAL DISTRIBUTION FORMULAS

Financial formulas are no panacea for educational problems. They are only instruments which have definite limitations. Each formula must be supported by safeguards and controls because the mere availability of funds does not guarantee that they will be spent as prescribed by the formula. Financial formulas can only be used along with other measures.

If the formula is intended to provide incentives for curriculum change, there must be simultaneous provision of materials for the new courses, retraining programs for teachers, and incentives for them to enroll in the new teaching specialities.

If the purpose of the formula is to discourage the teaching of certain subjects, the financing authorities must insure that knowledge of those subjects is not required for graduation, for receiving degrees, or for admission to higher levels of education.

If the purpose of the formula is to increase attendance rates, the financial authorities must insure that there is sufficient space in the schools to accommodate the increased enrollments.

The advantage of incentive formulas is that local authorities can decide how to spend the money to achieve the formula's goals. If attendance rates are low because of high opportunity costs for the students, extra funds can be spent on incentives such as clothing and health programs. If the cause is an impractical curriculum, the money can be used to change it.

Finally, the overall problem with all of these formulas is that the total amount of available funds also limits the effectiveness intended by the particular formula. In the simplest case, where monies are distributed according to educational units weighted by a given criterion, total expenditures cannot exceed the available budget. This constraint can be expressed as follows:

$$\sum_{R=1}^{m} M_R = \sum_{R=1}^{m} C_u \sum_{i=1}^{n} U_i a_i \leqq B \qquad (7)$$

where

M_R = money spent on area R.

B = total educational budget.

This implies that C_u, cost of educational units, or a_i, the weights, have to be adjusted to fulfill the conditions of budget limitations.

Where formulas include incentive coefficients for increasing participation rates, curriculum changes, and decreasing dropouts, these also have to be adjusted to fit the availability of funds.

Technically, it is possible to simulate results with programming models whereby costs of educational units, C_u, and incentive coefficients a_i are made variables subject to minimum levels of total expenditures per educational unit and total available funds.

CHAPTER XXIII

An Index for Measuring Educational Expenditures

MEASURES that link educational expenditures to national income or to government budgets are based on the sources of funds rather than on their use. The Index of Educational Funding presented in Chapter XIV refers to the sources of funds—the tax effort of the spender and the spender's willingness to budget for education. The Index of Educational Expenditures (IEE) indicates how these resources are spent.

AN INDEX OF EDUCATIONAL EXPENDITURES

A nation's preferences for educational spending are influenced by the nation's preference for various types of education, and the costs per student or graduate for these types of education.

For example, country A has a preference for elementary education, and B for secondary education. Both countries have the same number of children in the respective age groups, but per student costs for secondary school are much higher than per student costs in the elementary school. Under these conditions, country B will clearly have to make a larger financial effort to satisfy its preference.

If both countries have the same costs per student and the same preference for levels of education, but for demographic reasons there is a larger proportion of school-age children in country A, it will have to make a greater financial effort to satisfy its educational demand.

Derivation of the Index

Educational expenditures can be expressed as a function of cost per student and the number of students by level, as represented in the following formula:

$$E = C_e N_e + C_s N_s + C_h N_h \qquad (1)$$

where

E = total expenditures
C_e = costs per student in elementary education
C_s = " " " " secondary education
C_h = " " " " higher education
N_e = number of students in elementary education
N_s = " " " " secondary education
N_h = " " " " higher education

The number of students at each level can be expressed as the proportion of those enrolled in that level as a percentage of the total number of persons in the respective age group, and the number of persons in the age group. These relationships can be expressed as follows:

$N_e = n_eA_e$ where $n_e = \frac{N_e}{A_e}$

$N_s = n_sA_s$ where $n_s = \frac{N_s}{A_s}$

$N_h = n_hA_h$ where $n_h = \frac{N_h}{A_h}$

A_e = number of people in the age cohort of elementary schooling
A_s = number of people in the age cohort of secondary schooling
A_h = number of people in the age cohort of higher schooling

In turn,

$A_e = a_eP$ where $a_e = \frac{A_e}{P}$

$A_s = a_sP$ where $a_s = \frac{A_s}{P}$

$A_h = a_hP$ where $a_h = \frac{A_h}{P}$

P = total population.

Formula (1) can now be written as:

$$E = C_en_ea_eP + C_sn_sa_sP + C_hn_ha_hP \tag{2}$$

Because educational effort is usually expressed as the ratio of educational expenditures to a measure of national income, the following equation can be given:

$$E_x = \frac{E}{Y} = C_en_ea_e\frac{P}{Y} + C_sn_sa_s\frac{P}{Y} + C_hn_ha_h\frac{P}{Y} \tag{3}$$

or

$$E_x = \frac{E}{Y} = \frac{C_e}{Y/P} n_e a_e + \frac{C_s}{Y/P} n_s a_s + \frac{C_h}{Y/P} n_h a_h$$

$$= C_{ye} n_e a_e + C_{ys} n_s a_s + C_{yh} n_h a_h \qquad (4)$$

where

Y = national income

Y/P = income per capita

C_y = cost per student as a proportion of income per capita.

If a "typical country" is one whose profile has the geometric average of the characteristics of a group of countries in terms of demography, age-participation at different levels of schooling, and costs per students, the equation for the "typical country" can be written, as follows:

$$\widehat{E}_x = \frac{\widehat{E}}{\widehat{Y}} = \widehat{C}_{ye}\, \widehat{n}_e \widehat{a}_e + \widehat{C}_{ys}\, \widehat{n}_s \widehat{a}_s + \widehat{C}_{yh}\, \widehat{n}_h \widehat{a}_h \qquad (5)$$

where

$$\widehat{C}_y = \sqrt[m]{C_{y_1} \times C_{y_2} \times \ldots C_{y_m}}$$

$$\widehat{n} = \sqrt[m]{n_1 \times n_2 \times \ldots n_m}$$

and

$$\widehat{a} = \sqrt[m]{a_1 \times a_2 \times \ldots a_m}$$

The Index of Educational Expenditures then becomes

$$\frac{E_x}{\widehat{E}_x} \times 100.$$

Possible Uses of the Index

—When $E_x \neq \widehat{E}_x$, the Index readily indicates what accounts for the difference, and the contribution of each particular level to that difference, as expressed in the following formulas:

$$\overbrace{\frac{E_x - \widehat{E}_x}{\widehat{E}_x}}^{\Delta x} = \overbrace{\frac{C_{ye} n_e a_e - \widehat{C}_{ye} \widehat{n}_e \widehat{a}_e}{\widehat{E}_x}}^{\Delta e} + \overbrace{\frac{C_{ys} n_s a_s - \widehat{C}_{ys} \widehat{n}_s \widehat{a}_s}{\widehat{E}_x}}^{\Delta s} + \overbrace{\frac{C_{yh} n_h a_h - \widehat{C}_{yh} \widehat{n}_h \widehat{a}_h}{\widehat{E}_x}}^{\Delta h} \qquad (6)$$

$$\frac{\Delta x}{\widehat{E}_x} = \frac{\Delta e}{\widehat{E}_x} + \frac{\Delta s}{\widehat{E}_x} + \frac{\Delta h}{\widehat{E}_x} \qquad (7)$$

where

Δx = total difference

Δe = difference attributable to elemenary education

Δs = difference attributable to secondary education

Δh = difference attributable to higher education

—For each level, it is possible to calculate the influence of cost per student, enrollment to age ratio, and proportion of age to total population, by calculating $\frac{C_y}{\hat{C}_y}$, $\frac{n}{\hat{n}}$, and $\frac{a}{\hat{a}}$ for the different levels, as follows:

$$\frac{E_{xe}}{\hat{E}_{xe}} = \left(\frac{C_{ye}}{\hat{C}_{ye}}\right)\left(\frac{n_e}{\hat{n}_e}\right)\left(\frac{a_e}{\hat{a}_e}\right)$$

$$\frac{E_{xs}}{\hat{E}_{xs}} = \left(\frac{C_{ys}}{\hat{C}_{ys}}\right)\left(\frac{n_s}{\hat{n}_s}\right)\left(\frac{a_s}{\hat{a}_s}\right) \qquad (8)$$

$$\frac{E_{xh}}{\hat{E}_{xh}} = \left(\frac{C_{yh}}{\hat{C}_{yh}}\right)\left(\frac{n_h}{\hat{n}_h}\right)\left(\frac{a_h}{\hat{a}_h}\right)$$

If values of 100 are assigned to $\hat{C}$, $\hat{n}$, and $\hat{a}$, the weights of $\frac{C}{\hat{C}}$, $\frac{n}{\hat{n}}$, and $\frac{a}{\hat{a}}$ can be calculated separately for every level. This will show at a glance which factor contributes more weight to the relationship of $\frac{E}{\hat{E}}$.

—The Index can be calculated for a particular country over time using the same country in a particular base year or average of a few years for comparison. Letting t_0 equal the base period, the Index then becomes:

$$\frac{E_{x_t}}{E_{x_0}} = \frac{E_{ye_t} n_{e_t} a_{e_t} + C_{ys_t} n_{s_t} a_{s_t} + C_{yh_t} n_{h_t} a_{h_t}}{C_{ye_0} n_{e_0} a_{e_0} + C_{ys_0} n_{s_0} a_{s_0} + C_{yh_0} n_{h_0} a_{h_0}} \qquad (9)$$

Thus, changes in the different levels of education over time and their causes can be detected.

SUMMARY

The Index of Educational Expenditures illustrates the way resources are allocated in the educational sector of a country or province compared with a standard allocation derived statistically from a group of countries or provinces.

The Index clearly shows the relative preference for spending on one level of education rather than on another, and the relative influences of costs per student and population structure on this preference.

Afterword

THE future development of education depends mostly on how different sources of funds for education—old and new—can be found, and the way these resources will be used.

With a continuing reassessment of priorities in both developed and developing countries, it is necessary to expand current knowledge in the area of financing education.

This book was prepared after surveying the considerable literature on finance and economics of education, and after evaluating the most recent experiences with educational change in these areas.

To clarify issues of financing education, this book began with a short historical survey. The philosophies behind the issues of public versus private education were discussed. The initial chapters were thought useful in helping decision-makers more clearly perceive the beginnings of educational finance in their own country. This is especially true of those countries that may have inherited or copied a colonial system, now unsuitable to their changing social needs and political attitudes.

But the task ahead cannot be met by merely studying the past—no matter how recent. This book not only considered existing patterns but also presented new theoretical approaches. Detailed arguments were given for and against different approaches so that educational decision-makers and administrators could themselves evaluate the usefulness of each approach in their particular situations.

Considering this goal, the book reviewed the nature and effects of different taxes being used or proposed for financing education: methods for financing both private and public education at different levels; specialized education, such as vocational training and recurrent education; the financing of educational television and radio; and so on.

But all these varied methods will not produce much long-run success unless the resources they raise are efficiently used. Increasing the efficiency of educational programs depends upon all the components of a system—the administrators, teachers, and students.

The allocation of financial resources depends primarily on the decision-makers and administrators at all levels of the hierarchy. Their efficiency increases when they know how to make correct decisions. Therefore, the basic tools of decision-making were systematically presented. Again, the advantages and disadvantages were pointed out.

Special attention was given to decision-making in a complex setting of large systems. Planning and program budgeting are essential for better use of existing and future resources, and for incorporating educational programs into the overall development program designed to achieve society's goals. Along with methods of evaluating outputs, planning and program budgeting provide useful instruments for designing future directions.

Because methods of distributing funds deeply affect decision-making by educationists, the social, economic, and political implications of different types of fund distribution were analyzed.

These and many other aspects of the finance and efficiency of education were presented. The aim is to help decision-makers, in and out of the educational system, clarify the issues and provide guidelines for future actions.

But such a comprehensive survey and inventory of existing methods, and even the presentation of some new methods developed in the course of this survey, are not enough. Precise and specific knowledge in many of the areas investigated is still inadequate and inconclusive. There is still much "ground-breaking" to be done. This is especially true in the area of developing new resources for education. Bold new approaches are needed if education is to meet its own goals, and those of rapidly changing societies in developing countries.

Where education is being viewed more and more as a social service because it is influenced by many other social conditions—health and nutrition, for example—new ways of appropriating funds for education within the framework of social service have to be explored.

One of the most significant areas where new forms and innovations in education have occurred is in the private sector. In most countries, funding of education is relatively small, but it is an increasingly important added resource to public expenditures. New ways must be found to put private financing on a sound and continuing basis.

Historically, methods of financing education changed when the economic base used to finance education failed to expand with the demand for education. Such changes in financing must be anticipated. New and better methods for forecasting financial resources for education must be found.

A key concern of financing education involves the distribution of burdens of financing and the equity of providing educational services. New methodologies have to be found to more efficiently and equitably distribute educational benefits among the different regions and social classes.

More knowledge in these areas is certainly needed. But the area where the need for more and better knowledge is greatest is that of making better use of existing resources. Most important here is the need to improve decision-making. Such improvement will occur only with better data to base decisions on, and with the right type of data. A major weakness of past educational programs has been the unsystematic generating of data for decision-making. A systematic and selective generating of data at all levels of the educational hierarchy is a critical need.

To make the right decisions, policymakers and administrators must clearly know the educational system's outputs. They must also know how to measure these outputs so that they can evaluate the costs and benefits of different policies and programs. The goals themselves must be efficient ones. The economic value of educational outputs has to be considered within the greater framework of the country's overall planning and priorities.

To accomplish this, the workings of the labor market which the graduates of the educational system will enter must be better understood. Mechanisms for linking education to the world of work should be developed and utilized.

Decision-makers should also have more and better knowledge about the cost-effectivenes of different types of training and learning. A precise knowledge of the cost-effectiveness of different training alternatives will allow a flexible and efficient choice.

Educationists should become aware of new instructional technologies, as these are adaptable to local conditions. Technological advances have been slower in education than in other sectors. If ways of increasing technological progress are not found, no amount of financing can be adequate in the long run. Knowledge of the effects of new technologies on educational outputs is inconclusive. In developing countries, more evidence of their applicability and effectiveness is needed before instituting large-scale programs using new technologies.

These new demands for increasing knowledge are by no means an all-inclusive list. They merely map out broad areas for investigation in developing countries. But each country will have to choose its own educational research priorities based on its particular needs.

Knowledge is theoretical and is not enough for solving problems. The soundness of any theoretical program must be tested in specific situations. So the real challenge is for the decision-maker and the administrator.

This book will be useful in suggesting new approaches. But these suggestions will have to be tried out in the specific situations which decision-makers encounter in their own countries.

With a more flexible idea of program possibilities and a more realistic viewpoint of the necessity of obtaining and efficiently using resources, decision-makers will be able to anticipate and solve more knowledgeably the complex problems that education faces in the next decades.

But the real challenge is to make the ideas presented in this book a part of the actual educational process. When these ideas are adapted and implemented, providing education efficiently, equitably, and creatively will become more of a reality than a dream. Then, education will take its equal place within the structure and priorities of the world's developing countries.

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